EXHIBIT 2-A

(Final Environmental Assessment available at: https://new.mta.info/document/110751)

(Volume 5 of 6)

ADDRESS/NAME	DESCRIPTION	STATUS NRHP CRITERIA[1,2]	CHANGES	EFFECT
Engine Co. 34 Firehouse	The 2-story brick firehouse was designed by Hubert J. Treacy and built in 1937. The firehouse is a representative example of the two-company/two-vehicular entrance type the New York City Fire Department began using at the turn of the 20th century.	▪ NRHP-Eligible, A C	▪ No physical changes ▪ No changes to immediate setting	No effect
P.S. 191 Hudson Honors School	The 5-story building was built in 1955 and designed by William Gehron. The building has an L-shaped plan and minimized ornamentation.	▪ NRHP-Eligible, C	▪ No physical changes ▪ Minor change to setting – new pole with mast arm with tolling equipment on adjacent sidewalk	No effect
Cova Building	The 12-story office building, built between 1922 and 1924 by Alexander Cohen, has terra-cotta ornaments and decorative metal panels.	▪ NRHP-Eligible, C	▪ No physical changes ▪ Minor change to setting – two new poles with mast arm with tolling equipment on sidewalks on same block	No effect
59th Street-Columbus Circle Subway Station	Completed in 1904, the station is one of the first original Interborough Rapid Transit subway stations to be completed. The station has Beaux Arts painting and decoration.	▪ NRHP-Listed, A C ▪ NYCL Interior Landmark	▪ No physical changes ▪ No changes to setting	No effect

Central Park[5]	Central Park is the first large-scale public park in the nation. Created from 1857 to 1866, the park was designed by Frederick Law Olmsted and Calvert Vaux.	▪ NRHP-Listed, C
		▪ NYC Scenic Landmark
		▪ NHL
			▪ Minor physical changes:
			  ▪ Replacement of four existing poles with new poles with tolling equipment at three detection locations on the interior park roads (note, access to Central Park interior roads is restricted to authorized vehicles only)
			  ▪ Replacement of existing light pole with new pole with tolling equipment on Fifth Avenue sidewalk
			  ▪ Installation of a new pole with mast arm on Central Park West sidewalk.
			▪ Minor changes to setting
				No adverse effect

Upper East Side Historic District (NRHP)	This district is defined by mansions, apartment houses, and row houses in a range of architectural styles, dating from 1862 to 1938.	▪ NRHP-Listed, A C	▪ Minor changes – installation of one new pole with mast arm with tolling equipment on sidewalk	No adverse effect

ADDRESS/NAME	DESCRIPTION	STATUS NRHP CRITERIA[1,2]	CHANGES	EFFECT
Upper East Side Historic District (NYCHD)		▪ NYCHD	▪ Minor changes to setting	
Upper East Side Historic District Boundary Increase and Additional Documentation	The expansion of the original Upper East Side Historic District includes multiple domestic, religious, commercial, and government buildings with similar historic development and period integrity. The period of significance is from 1862 to 1956.	▪ NRHP-Listed, A C	▪ Minor changes – installation of one new pole with mast arm with tolling equipment on sidewalk ▪ Minor changes to setting	No adverse effect
Grand Army Plaza	Grand Army Plaza was laid out to the designs of Carr re Hastings in 1913–1916. The plaza includes decorative paving and landscaped areas and is divided by 59th Street; the plaza to the south includes the Pulitzer Fountain and the plaza to the north the General Sherman Monument.	▪ NYC Scenic Landmark	▪ No physical changes ▪ No changes to immediate setting	No effect
Public Baths	The Public Baths were built by the City of New York in 1904–1906 and designed by Arnold W. Brunner and William M. Aiken. The Public Baths are a 1-story brick building with limestone base.	▪ NRHP-Listed, A C ▪ NYCL	▪ No physical changes ▪ Minor changes to setting – new pole with mast arm with tolling equipment on adjacent sidewalk	No effect
Gansevoort Market Historic District	This district is defined by a mix of buildings typically constructed between the 1840s and 1940s linked to the city's working waterfront and includes a contributing historic street grid.	▪ NRHP-Listed, A C ▪ NYCHD	▪ Minor changes – installation of one new pole with equipment cabinet on sidewalk ▪ Minor change to setting	No adverse effect

Source: CRIS at https://cris.parks.ny.gov; NYC Landmarks Preservation Commission "Discover NYC Landmarks" at https://www1.nyc.gov/site/lpc/index.page.

Refer to the Section 106 Finding Documentation in **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation"** for more information about the potential changes associated with the CBD Tolling Alternative.

[1] National Register of Historic Places, Significance Criteria A through D.

[2] For certain properties, the SHPO's CRIS does not provide information regarding the NRHP criteria under which the properties were determined eligible; therefore, information is not provided in this table for those properties.

[3] The Arch and Colonnade is an NYCL. The bridge structure/deck is not an NYCL or NYCL-Eligible.

[4] The Harding Building is the only building in the Garment Center Historic District (NRHP-listed) that is in the APE.

[5] The NRHP and NYCL boundaries differ for Central Park at the location of the corner of the park at Central Park South (59th Street) and Fifth Avenue; this corner is included as part of the Grand Army Plaza Scenic Landmark but excluded from the New York City Scenic Landmark boundaries. Grand Army Plaza is included within the Central Park NRHP and NHL boundaries.

LPC = New York City Landmarks Preservation Commission
NRHP = National Register of Historic Places
NYCL = New York City Landmark and New York City Scenic Landmark
NYCHD = New York City Historic District
NHL = National Historic Landmark

The Section 106 Finding Documentation describes the identified historic properties, applies the criteria of adverse effect (36 CFR 800.5(a)(1)), and concludes that the Project would have no adverse effect on historic properties. NYSDOT provided the Draft (Proposed Final) Section 106 Finding Documentation for review by the SHPO and Consulting Parties on April 12, 2022. FHWA provided the Draft (Proposed Final) Section 106 Finding Documentation to the four Federally recognized Native American tribes with an interest in the geographical area of the Project on April 13, 2022. The SHPO concurred with the No Adverse Effect finding on April 18, 2022, and NPS concurred with the No Adverse Effect finding on May 19. 2022 (see **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation")**.

Revisions were made to the Section 106 Finding Documentation based on comments received by the Consulting Parties on the Draft (Proposed Final) Finding Documentation and on the subsequent submission of information regarding the installation of tolling signage within Central Park as described in **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation**." The comments were not substantive and did not alter the recommended finding. With these revisions, the Finding Documentation was considered final. Based on the consultation described in **Appendix 8, "Historic and Cultural Resources: Section 106 Finding Documentation"** and review of the Section 106 Finding Documentation, in a letter dated June 21, 2022, the FHWA issued a No Adverse Effect determination for the Project and a determination that the requirements of 36 CFR Part 800 have been met for this undertaking. FHWA issued a No Adverse Effect determination for the Project in a letter dated June 21, 2022.

8.4.2.1 Effects on Historic Sites Protected by Section 4(f) of the U.S. Department of Transportation Act

Because implementation of the CBD Tolling Alternative would require the placement of tolling infrastructure and tolling system within the APE and on or in proximity to historic sites or within historic districts that are NRHP-listed or NHRP-eligible sites, FHWA must evaluate the potential use of historic sites for this Project in accordance with Section 4(f) (refer to **Chapter 19, "Section 4(f) Evaluation").**

8.5 CONCLUSION

FHWA has undertaken consultation pursuant to Section 106 to assess the Project's potential effects on historic properties. Through that process, FHWA determined that the Project would not result in any direct or indirect effects on historic properties that would alter the characteristics of a historic property that qualify it for inclusion in the NRHP, and the Project would have No Adverse Effect on historic and cultural resources. **Table 8-2** summarizes the effects of the CBD Tolling Alternative and commitments that will be undertaken by the Project Sponsors pursuant to the Section 106 consultation for the Project ***[and the implementation approach for those commitments]***.

Table 8-2. Summary of Effects of the CBD Tolling Alternative on Historic and Cultural Resources *[and Implementation Approach for Mitigation and Enhancement Measures]*

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS	TIMELINE FOR PRE- AND POST-PROJECT IMPLEMENTATION DATA COLLECTION FOR SPECIFIC MEASURES	THRESHOLD FOR DETERMINING WHEN NEXT STEP(S) WILL BE IMPLEMENTED	TIMING FOR SPECIFIC MEASURES	LEAD AGENCY
New tolling infrastructure and tolling system equipment on or near historic properties	Based on a review of the Project in accordance with Section 106 of the National Historic Preservation Act, FHWA has determined that the Project would have No Adverse Effect on historic properties and the State Historic Preservation Office has concurred.	No	Through consultation undertaken pursuant to Section 106 of the NHPA, the Project Sponsors agreed to the following measures to avoid potential adverse effects on historic resources: • Tolling infrastructure and tolling system equipment on city streets would not be installed in front of a historic building's entrance. • Historic or decorative sidewalk paving within historic districts would not be removed or altered to install tolling infrastructure and tolling system equipment. On Fifth Avenue and Central Park West, any granite-block pavers that would be removed to install replacement poles would be reused or replaced in kind. Proposed work on sidewalks or protected paving located within historic districts designated by LPC would following guidance as set forth in Chapter 10: Historic Districts with Sidewalks Regulated by LPC of the LPC Permit Guidebook (2019). • New light poles and associated equipment would be visually consistent with the existing palette of street furniture in the APE. • In Central Park, new tolling infrastructure and tolling system equipment would have the same appearance as the poles they would replace. • For new tolling infrastructure and tolling system equipment on the park edges (Fifth Avenue and Central Park West), place poles near the curbs consistent with the presence of modern street furniture in the area. On Central Park West, measures implemented to minimize the visual impact of the pole with a 50-foot-long mast arm include combining the disparate required elements of the tolling system equipment into single enclosures ("clusters") that are the minimum size possible (smaller than a traffic light). The proposed pole and tolling infrastructure and tolling system equipment would have a uniform green material finish that matches the color palette of infrastructure on the street. The Memorandum of Understanding between NYCDOT and TBTA for the Project restricts any equipment other than the tolling system equipment from being installed on the pole and mast arm. • Coordinate with NYC Parks, SHPO, and NPS regarding additional street trees to help screen the pole and mast arm proposed on the Central Park West sidewalk. • Coordinate with NYC Parks and the Central Park Conservancy regarding the final design of the tolling infrastructure and tolling system equipment in Central Park.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Will occur during design, development, testing and/or construction as per contract.	TBTA will ensure contractors comply with contract requirements.

8.6 [FINDINGS]

[In accordance with Section 106 of the National Historic Preservation Act of 1966, as amended, and its implementing regulations, 36 CFR Part 80, FHWA undertook a review of the Project's effects on historic properties, in consultation with the SHPO, Federally-recognized Native American tribes with an interest in the geographical area of the Project location, and four other Consulting Parties—NPS, LPC, the New York Landmarks Conservancy, and NYC Parks. Public input regarding the Project's effects on historic properties was also considered. Through that process, FHWA, in coordination with NYSDOT, has applied the Criteria of Adverse Effect (36 CFR 800.5(a)(1)) to identified historic properties within the Project's Area of Potential Effect, and finds the Project will have No Adverse Effect.]

9. Visual Resources

9.1 INTRODUCTION

This chapter describes the potential effects of implementation of the CBD Tolling Alternative on visual resources and aesthetic conditions in the local study area for tolling infrastructure and tolling system equipment.[1] FHWA provides procedures for assessing the impact of roadway projects on prominent visual resources and aesthetic conditions of the surrounding communities. FHWA's Visual Impact Assessment (VIA) guidance begins with a decision tree, a process that determines whether a VIA is required for a project and, if so, the appropriate level of documentation. The guidance calls for a scoping tool—the VIA Scoping Questionnaire—to help determine first if a VIA is necessary, and if so, the level of detail needed to fulfill regulatory and judicial requirements.[2] The Project Sponsors completed the VIA Scoping Questionnaire, and the resulting score for the Project determined that no VIA is required (see **Appendix 9, "Visual Resources"**). Nonetheless, the Project Sponsors prepared a detailed study to describe the physical elements of the CBD Tolling Alternative that could affect the visual environment (see **Appendix 9**). The chapter summarizes the results and demonstrates that the effects of the Project would be neutral and not adverse.

9.2 AFFECTED ENVIRONMENT

For the CBD Tolling Alternative, the area of visual effect is a cultural environment, as defined by FHWA guidance, because it is a fully developed urban landscape. The Project environment (i.e., the specific locations where Project elements are proposed) consists of the transportation right-of-way and adjacent sidewalks where new tolling infrastructure and tolling system equipment would be placed. The area of visual effect also includes portions of roadway and adjacent sidewalk in three small areas of Central Park near its southern boundary. There is natural environment in Central Park, but the area of visual effect for the Project in Central Park is limited to grassy areas and trees close to the roadway that can be considered a cultural environment according to the definition in FHWA guidance. Other landscaped park spaces are in the area of visual effect, but these are urban parks that are also not natural environment according to the definition in FHWA guidance.

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1 FHWA. January 2015. *Guidelines for the Visual Impact Assessment of Highway Projects*. FHWA-HEP-15-029. https://www.environment.fhwa.dot.gov/env_topics/other_topics/VIA_Guidelines_for_Highway_Projects.aspx.

2 Refer to FHWA's *Visual Impact Assessment Guidelines of Highway Projects*, Chapter 3, for more information. https://www.environment.fhwa.dot.gov/env_topics/other_topics/VIA_Guidelines_for_Highway_Projects.aspx#chap3.

9.3 ENVIRONMENTAL CONSEQUENCES

The proposed tolling infrastructure, tolling system equipment, and signage associated with the CBD Tolling Alternative would be similar to existing infrastructure and signage present along the roadways throughout the Manhattan CBD and nearby areas. The tolling infrastructure would include the following:

- Poles and mast arms similar to those used for streetlights and traffic lights today
- Cameras, detectors, and other equipment mounted from tolling infrastructure
- Signage similar in size and character to signs already present throughout Manhattan

The poles for the CBD Tolling Alternative would typically be at locations where standard poles are currently installed or would replace existing poles with new poles that are up to about 20 feet from the existing poles.

The tolling infrastructure and tolling system equipment has been designed to minimize its visual impact, by using existing infrastructure as much as practicable and coordinating the appearance of new tolling infrastructure and tolling system equipment with the existing street furniture palette. The proposed tolling system equipment would be clustered into single enclosures to minimize the visual impact. The cameras included in the array of tolling system equipment would use infrared illumination at night to allow images of license plates to be collected without any need for visible light.

9.4 CONCLUSION

For the various viewer groups in the area of visual effect—including residential, recreational, institutional, civic, retail, and commercial "neighbors" (i.e., those who may have a view of the Project), and commuting, touring, and shipping "travelers" (i.e., those who would use the affected roadways)—the visual changes introduced by the CBD Tolling Alternative would be minimal in the context of the urban landscape and are not likely to result in a change in visual quality as perceived by these viewers. Therefore, the CBD Tolling Alternative would have a neutral effect on viewer groups. **Table 9-1** summarizes the effects of the Project.

Table 9-1. Summary of Effects of the CBD Tolling Alternative on Visual Resources

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Changes in visual environment resulting from new tolling infrastructure and tolling system equipment	Infrastructure and equipment would be similar in form to streetlight poles, sign poles, or similar structures already in use throughout New York City. Cameras included in the array of tolling system equipment would use infrared illumination at night to allow images of license plates to be collected without any need for visible light. The Project would have a neutral effect on viewer groups and no adverse effect on visual resources.	No	No mitigation needed. No adverse effects.

10 Air Quality

10.1 INTRODUCTION

This chapter assesses the potential effect of implementing the CBD Tolling Alternative on air quality, air pollution, and greenhouse gas (GHG) emissions. It also summarizes the Project's Transportation Conformity Determination.

Air pollution is a general term that refers to one or more chemical substances that degrade the quality of the atmosphere. Individual air pollutants and air toxics can degrade the atmosphere by reducing visibility; they can also damage property, reduce the productivity or vigor of crops or natural vegetation, and harm human and/or animal health. Air quality is the term used to describe the level of pollution in the atmosphere and is usually compared to a regulated set of standards established by the U.S. Environmental Protection Agency (USEPA).

10.1.1 Context

The regional study area for the traffic analyses includes 28 counties in New York, New Jersey, and Connecticut.

Most of the regional study area is within the New York-N. New Jersey-Long Island nonattainment area[1] for the 2008 and 2015 ozone (O_3) National Ambient Air Quality Standards (NAAQS), and many counties, or portions thereof, are maintenance areas (previously nonattainment areas) for carbon monoxide (CO) and particulate matter ($PM_{2.5}$ and PM_{10}) NAAQS. Furthermore, New York County, which includes the Manhattan CBD, is a nonattainment area for PM_{10}. **Appendix 10A, "Air Quality: Description of Pollutants and MOVES Modeling Files,"** provides a full description of pollutants. According to monitored air quality data collected by USEPA around New York City and New Jersey, there were several exceedances of the O_3 standard, but no exceedances of any of the other criteria pollutants.

According to the New York City Community Air Survey (NYCCAS), annual average levels of four key pollutants ($PM_{2.5}$, nitrogen dioxide [NO_2], nitric oxide, and black carbon) decreased citywide—from 33 to 52 percent—between 2009 and 2019. Air quality has improved substantially since the City of New York required building owners to convert to cleaner heating oils in 2015.

10.1.2 Regulations

The Clean Air Act (CAA) and the Final Transportation Conformity Rule (40 CFR Parts 51 and 93) direct USEPA to implement environmental policies and regulations that will ensure acceptable levels of air quality.

[1] A geographic area that meets or does better than the standard(s) is called an attainment area, while areas that do not meet the standard(s) are referred to as nonattainment or maintenance areas.

The CAA and the Final Transportation Conformity Rule affect the funding and approval of proposed transportation projects. According to CAA Title I, Section 176 (c) 2: "No Federal agency may approve, accept or fund any transportation plan, program or project unless such plan, program or project has been found to conform to any applicable State Implementation Plan in effect under this act."

According to Section 176(c)2(A) of the CAA, conformity to an implementation plan means not causing any new or reducing the severity and number of any existing violations of the NAAQS and achieving expeditious attainment of such standards, and that such activities will not:

- Cause or contribute to any new violation of any NAAQS in any area;
- Increase the frequency or severity of any existing violation of any NAAQS in any area; or
- Delay timely attainment of any NAAQS or any required interim emission reductions or other milestones in any area.

10.1.3 National and State Ambient Air Quality Standards

As required by the CAA, NAAQS have been established for six major air pollutants, known as criteria pollutants: CO, NO_2, O_3, $PM_{2.5}$ and PM_{10}, sulfur dioxide (SO_2), and lead (Pb). **Table 10-1** summarizes the Federal standards. "Primary" standards provide public health protection, including protecting the health of "sensitive" populations such as asthmatics, children, and the elderly, while "secondary" standards are intended to protect the nation's welfare, accounting for air pollutant effects on soil, water, visibility, materials, vegetation, and other aspects of general welfare.

10.1.4 Attainment Status

Section 107 of the CAA requires that USEPA publish a list of all geographic areas in compliance with the NAAQS and those not attaining the NAAQS. Areas not in NAAQS compliance are deemed nonattainment areas. Areas that have insufficient data to support a determination are deemed "unclassified" and are treated as being attainment areas until proven otherwise. Maintenance areas are areas that were previously designated as nonattainment for a pollutant but have since demonstrated compliance with the NAAQS for that pollutant. An area's designation is based on the data collected by the state monitoring network on a pollutant-by-pollutant basis.

To provide background on existing air quality conditions in the Project's 28-county regional study area, **Table 10-2** lists the counties or portions thereof that are currently attainment, nonattainment, or maintenance areas for the following criteria pollutants: CO, O_3, $PM_{2.5}$ and PM_{10}, and SO_2. All counties in the study area are in attainment for Pb and NO_2; as such, these pollutants have not been included in the table.

The majority of the regional study area is classified nonattainment for the 2008 and 2015 O_3 NAAQS, while many counties, or portions thereof, are maintenance areas for CO and $PM_{2.5}$.

Table 10-1. National Ambient Air Quality Standards

POLLUTANT		PRIMARY/ SECONDARY	AVERAGING TIME	LEVEL	FORM
Carbon Monoxide (CO)		Primary	8-hour	9 parts per million (ppm)	Not to be exceeded more than once per year
			1-hour	35 ppm	
Lead (Pb)		Primary and Secondary	Rolling 3-month average	0.15 micrograms per cubic meter of air (g/m^3)(1)	Not to be exceeded
Nitrogen Dioxide (NO_2)		Primary	1-hour	100 parts per billion (ppb)	98th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Primary and Secondary	Annual	53 ppb(2)	Annual Mean
Ozone (O_3)		Primary and Secondary	8-hour	0.070 ppm(3)	Annual fourth-highest daily maximum 8-hr concentration, averaged over 3 years
Particulate Matter	$PM_{2.5}$	Primary	Annual	12 µg/m^3	Annual mean, averaged over 3 years
		Secondary	Annual	15 µg/m^3	Annual mean, averaged over 3 years
		Primary and Secondary	24-hour	35 µg/m^3	98th percentile, averaged over 3 years
	PM_{10}	Primary and Secondary	24-hour	150 µg/m^3	Not to be exceeded more than once per year on average over 3 years
Sulfur Dioxide (SO_2)		Primary	1-hour	75 ppb(4)	99th percentile of 1-hour daily maximum concentrations, averaged over 3 years
		Secondary	3-hour	0.5 ppm	Not to be exceeded more than once per year

Source: U.S. Environmental Protection Agency, Office of Air and Radiation, https://www.epa.gov/criteria-air-pollutants/naaqs-table;
New York State Department of Environmental Conservation (NYSDEC), http://www.dec.ny.gov/chemical/8406.html.

Notes:

(1) Final rule signed October 15, 2008. The 1978 Pb standard (1.5 µg/m^3 as a quarterly average) remains in effect until one year after an area is designated for the 2008 standard, except that in areas designated nonattainment for the 1978 year, the 1978 standard remains in effect until implementation plans to attain or maintain the 2008 standard are approved.

(2) The official level of the annual NO_2 standard is 0.053 parts per million (ppm), equal to 53 parts per billion (ppb), which is shown here for the purpose of clearer comparison to the 1-hour standard.

(3) Final rule signed October 1, 2015, and effective December 28, 2015. The previous (2008) O_3 standards additionally remain in effect in some areas. Revocation of the previous (2008) O_3 standards and transitioning to the current (2015) standards will be addressed in the implementation rule for the current standards.

(4) The previous SO_2 standards (0.14 ppm 24-hour and 0.03 ppm annual) will additionally remain in effect in certain areas: (1) any area for which it is not yet 1 year since the effective date of designation under the current (2010) standards, and (2) any area for which implementation plans providing for attainment of the current (2010) standard have not been submitted and approved and which is designated nonattainment under the previous SO_2 standards or is not meeting the requirements of a State Implementation Plan (SIP) call under the previous SO_2 standards (40 CFR 50.4(3)). A SIP call is a U.S. Environmental Protection Agency action requiring a state to resubmit all or part of its SIP to demonstrate attainment of the required NAAQS.

Table 10-2. Current Air Quality Attainment Status

STATE	COUNTY	CARBON MONOXIDE	O_ONE	PARTICULATE MATTER ($PM_{2.5}$)	PARTICULATE MATTER (PM_{10})	SULFUR DIOXIDE
New York	Bronx	— Maintenance —	Nonattainment	— Maintenance —	Attainment	Attainment
	Dutchess	Attainment	Attainment	Attainment	Attainment	Attainment
	Kings	— Maintenance —	Nonattainment	— Maintenance —	Attainment	Attainment
	Nassau	— Maintenance —	Nonattainment	— Maintenance —	Attainment	Attainment
	New York	— Maintenance —	Nonattainment	— Maintenance —	Nonattainment[1]	Attainment
	Orange	Attainment	Attainment	— Maintenance —	Attainment	Attainment
	Putnam	Attainment	Attainment	Attainment	Attainment	Attainment
	Queens	— Maintenance —	Nonattainment	— Maintenance —	Attainment	Attainment
	Richmond	— Maintenance —	Nonattainment	— Maintenance —	Attainment	Attainment
	Rockland	Attainment	Nonattainment	— Maintenance —	Attainment	Attainment
	Suffolk	Attainment	Nonattainment	— Maintenance —	Attainment	Attainment
	Westchester	— Maintenance —	Nonattainment	— Maintenance —	Attainment	Attainment
New Jersey	Bergen	— Maintenance —	Nonattainment	— Maintenance —	Attainment	Attainment
	Essex	— Maintenance —	Nonattainment	— Maintenance —	Attainment	Attainment
	Hudson	— Maintenance —	Nonattainment	— Maintenance —	Attainment	Attainment
	Hunterdon	Attainment	Nonattainment	Attainment	Attainment	Attainment
	Mercer	Attainment	Nonattainment	— Maintenance —	Attainment	Attainment
	Middlesex	Attainment	Nonattainment	— Maintenance —	Attainment	Attainment
	Monmouth	Attainment	Nonattainment	— Maintenance —	Attainment	Attainment
	Morris	Attainment	Nonattainment	— Maintenance —	Attainment	Attainment
	Ocean	Attainment	Nonattainment	Attainment	Attainment	Attainment
	Passaic	— Maintenance —	Nonattainment	— Maintenance —	Attainment	Attainment
	Somerset	Attainment	Nonattainment	— Maintenance —	Attainment	Attainment
	Sussex	Attainment	Nonattainment	Attainment	Attainment	Attainment
	Union	— Maintenance —	Nonattainment	— Maintenance —	Attainment	Attainment
	Warren	Attainment	Nonattainment	Attainment	Attainment	Nonattainment
Connecticut	Fairfield	Attainment	Nonattainment	— Maintenance —	Attainment	Attainment
	New Haven	Attainment	Nonattainment	— Maintenance —	— Maintenance —	Attainment

Source: U.S. Environmental Protection Agency Green Book.
Note: As per 40 CFR Part 81.333, this PM_{10} designation applied only to the annual form of the PM_{10} NAAQS. The annual PM_{10} NAAQS was revoked on October 17, 2006.

10.1.5 Mobile Source Air Toxics

In addition to the criteria pollutants for which there are NAAQS, USEPA regulates air toxics, also known as hazardous air pollutants. Hazardous air pollutants are those pollutants known or suspected to cause cancer or other serious health effects. Most hazardous air pollutants originate from human-made sources, including on-road mobile sources (e.g., vehicles), non-road mobile sources (e.g., airplanes), area sources (e.g., landfills), point sources (e.g., dry cleaners), line sources (e.g., roadways), and stationary sources (e.g., factories or refineries).

Controlling hazardous air pollutant emissions became a national priority with the passage of the CAA Amendments of 1990, which mandate that USEPA regulate 188 air toxics. USEPA has assessed this expansive list in its latest rule—Control of Hazardous Air Pollutants from Mobile Sources (72 Federal Register 8427, February 26, 2007)—and identified a group of 93 compounds emitted from mobile sources that are listed in its Integrated Risk Information System.[2] In addition, in its 2011 National Air Toxics Assessment, USEPA identified nine compounds, referred to as priority mobile source air toxics (MSAT), which account for substantial contributions from mobile sources and are among the national- and regional-scale cancer risk drivers or contributors and non-cancer hazard contributors.[3] These compounds are 1,3-butadiene, acetaldehyde, acrolein, benzene, diesel particulate matter (diesel PM), ethylbenzene, formaldehyde, naphthalene, and polycyclic organic matter. FHWA considers these the priority MSAT.

The 2007 USEPA rule mentioned above requires controls that will dramatically decrease MSAT emissions through cleaner fuels and cleaner engines. FHWA, using USEPA's Motor Vehicle Emission Simulator (MOVES) model, estimates a combined nationwide reduction of 91 percent in the total annual emissions for the priority MSATs even as forecast VMT increases by 45 percent from 2010 to 2050 (**Figure 10-1**).[4] Furthermore, USEPA's *Final Rule for Control of Air Pollution from Motor Vehicles: Tier 3 Motor Vehicle Emission and Fuel Standards,* which took effect in 2017, set new vehicle emissions standards and lowered the sulfur content of gasoline, considering the vehicle and its fuel as an integrated system. The Tier 3 vehicle standards have further reduced both tailpipe and evaporative emissions, including MSATs, from passenger cars, light-duty trucks, medium-duty passenger vehicles, and some heavy-duty vehicles.[5] As a result of these controls, overall reductions in MSAT are expected regardless of Project scenario.

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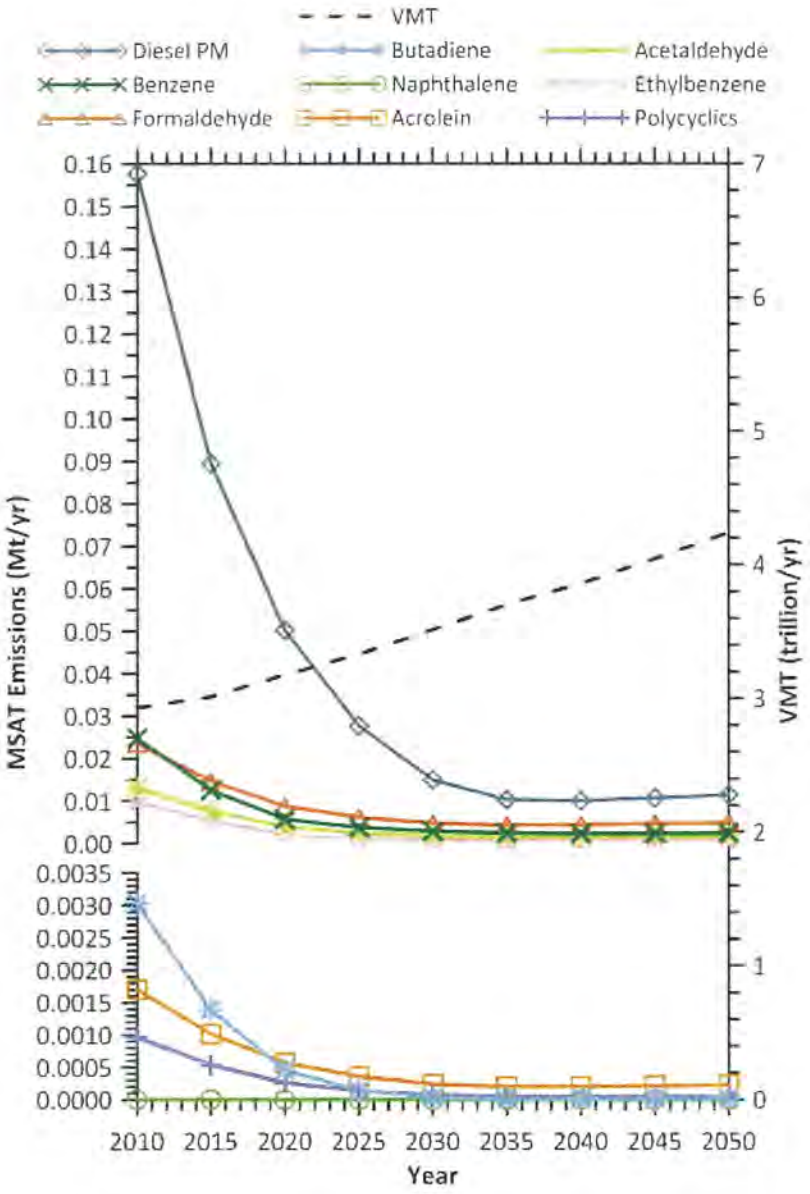
2 EPA's Integrated Risk Information System; http://www.epa.gov/iris/.

3 EPA's 2011 National Air Toxics Assessment; https://www.epa.gov/national-air-toxics-assessment/2011-national-air-toxics-assessment.

4 Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents; https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/.

5 https://www.epa.gov/regulations-emissions-vehicles-and-engines/final-rule-control-air-pollution-motor-vehicles-tier-3.

Figure 10-1. FHWA Projected National MSAT Emission Trends (2010 to 2050) using EPA's MOVES2014a Model for Vehicles Operating on Roadways



Source: FHWA.

Because of the unique properties of the Project (affecting a widespread area, located in proximity to populated areas), the Project has been analyzed as a Tier 3 project with higher potential MSAT effects, as defined by FHWA's *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents*. Thus, a quantitative MSAT emissions analysis was conducted for the Project. The MSAT analysis was conducted on a subregional basis to capture the overall changes in MSAT emissions in each county. Because of the Project's unique scope and the extent of its impact on roadways of all types throughout the region, the MSAT emissions analysis was conducted for the 12-county region (see **Table 10-3** and **Section 10.1.7.1**).

As stated in FHWA's *Frequently Asked Questions (FAQ) Conducting Quantitative MSAT Analysis for FHWA NEPA Documents,*[6] Project-specific knowledge and consideration of local circumstances were considered in the overall MSAT analysis approach. In order to potentially focus on only those segments with the greatest benefits and effects, changes in annual average daily traffic (AADT) were screened (plus or minus 5 percent) across the 12-county region where the largest benefits and effects would be expected (**Appendix 10D, "Changes in Annual Average Daily Traffic (AADT)"**). Few roadway segments met these criteria, despite the extensive network and multiple types of roadways within the region. Thus, the quantitative MSAT emissions analysis included the entire traffic network of the 12-county study area. This approach is consistent with the regional pollutant burden and GHG analysis and provides a common basis for comparison across all analyses. In this chapter, maps and changes display VMT, which is the sum of the AADT multiplied by the individual link length.

10.1.5.1 Incomplete or Unavailable Information for Project-Specific Mobile Source Air Toxics Health Impacts Analysis

In FHWA's view, information is incomplete or unavailable to credibly predict a project-specific health impact due to changes in MSAT emissions associated with a proposed set of alternatives. The outcome of such an assessment, adverse or not, would be influenced more by the uncertainty introduced into the process through assumption and speculation rather than any genuine insight into the actual health impacts directly attributable to MSAT exposure associated with a proposed action.

USEPA is responsible for protecting the public health and welfare from any known or anticipated effect of an air pollutant. They are the lead authority for administering the CAA and its amendments and have specific statutory obligations with respect to hazardous air pollutants and MSAT. USEPA is in the continual process of assessing human health effects, exposures, and risks posed by air pollutants. They maintain the Integrated Risk Information System, which is "a compilation of electronic reports on specific substances found in the environment and their potential to cause human health effects."[7] Each report contains assessments of non-cancerous and cancerous effects for individual compounds and quantitative estimates of risk levels from lifetime oral and inhalation exposures with uncertainty spanning perhaps an order of magnitude.

Other organizations are also active in the research and analyses of the human health effects of MSAT, including the Health Effects Institute (HEI). A number of HEI studies are summarized in Appendix D of FHWA's *Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents.*[8] Among the adverse health effects linked to MSAT compounds at high exposures are cancer in humans in occupational settings; cancer in animals; and irritation to the respiratory tract, including the exacerbation of asthma. Less obvious is the adverse human health effects of MSAT compounds at current environmental concentrations[9] or in the future as vehicle emissions substantially decrease.

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6 https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/moves_msat_faq.cfm.
7 U.S. Environmental Protection Agency, https://www.epa.gov/iris.
8 https://www.fhwa.dot.gov/environment/air_quality/air_toxics/policy_and_guidance/msat/page04.cfm.
9 HEI Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects.

The methodologies for forecasting health impacts include emissions modeling; dispersion modeling; exposure modeling; and then final determination of health impacts—each step in the process building on the model predictions obtained in the previous step. All are encumbered by technical shortcomings or uncertain science that prevents a more complete differentiation of the MSAT health impacts among a set of alternatives. These difficulties are magnified for lifetime (i.e., 70-year) assessments, particularly because unsupportable assumptions would have to be made regarding changes in travel patterns and vehicle technology (which affects emissions rates) over that time frame, since such information is unavailable.

It is particularly difficult to reliably forecast 70-year lifetime MSAT concentrations and exposure near roadways; to determine the portion of time that people are actually exposed at a specific location; and to establish the extent attributable to a proposed action, especially given that some of the information needed is unavailable.

There are considerable uncertainties associated with the existing estimates of toxicity of the various MSAT, because of factors such as low-dose extrapolation and translation of occupational exposure data to the general population, a concern expressed by HEI.[10] As a result, there is no national consensus on air dose-response values assumed to protect the public health and welfare for MSAT compounds, and in particular for diesel PM. USEPA states that with respect to diesel engine exhaust, "[t]he absence of adequate data to develop a sufficiently confident dose-response relationship from the epidemiologic studies has prevented the estimation of inhalation carcinogenic risk."[11]

There is also the lack of a national consensus on an acceptable level of risk. The current context is the process used by USEPA as provided by the CAA to determine whether more stringent controls are required to provide an ample margin of safety to protect public health or to prevent an adverse environmental effect for industrial sources subject to the maximum achievable control technology standards, such as benzene emissions from refineries. The decision framework is a two-step process. The first step requires USEPA to determine an "acceptable" level of risk due to emissions from a source, which is generally no greater than approximately 100 in a million. Additional factors are considered in the second step, the goal of which is to maximize the number of people with risks less than 1 in a million due to emissions from a source. The results of this statutory two-step process do not guarantee that cancer risks from exposure to air toxics are less than 1 in a million; in some cases, the residual risk determination could result in maximum individual cancer risks that are as high as approximately 100 in a million. In a June 2008 decision, the U.S. Court of Appeals for the District of Columbia Circuit upheld USEPA's approach to addressing risk in its two-step decision framework. Information is incomplete or unavailable to establish that even the largest of highway projects would result in levels of risk greater than deemed acceptable.[12]

Because of the limitations in the methodologies for forecasting health impacts described, any predicted difference in health impacts between alternatives is likely to be much smaller than the uncertainties

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10 HEI Special Report 16, https://www.healtheffects.org/publication/mobile-source-air-toxics-critical-review-literature-exposure-and-health-effects.

11 U.S. Environmental Protection Agency. IRIS database, Diesel Engine Exhaust, Section II.C. https://cfpub.epa.gov/ncea/iris/iris_documents/documents/subst/0642.htm#quainhal.

12 https://www.cadc.uscourts.gov/internet/opinions.nsf/284E23FFE079CD59852578000050C9DA/$file/07-1053-1120274.pdf

associated with predicting the impacts. Consequently, the results of such assessments would not be useful to decision makers, who would need to weigh this information against a project's benefits—such as reducing traffic congestion, accident rates, and fatalities plus improved access for emergency response—that are better suited for quantitative analysis.

10.1.6 Climate Change and Greenhouse Gases

Although no national standards, criteria, or thresholds are in effect for GHGs, their role in climate change is of important national and global concern. While Earth has gone through many natural changes in climate in its history, there is general agreement that Earth's climate is currently changing at an accelerated rate and will continue to do so for the foreseeable future. Anthropogenic (human-caused) GHG emissions contribute to this process.[13] Carbon dioxide (CO_2) makes up the largest component of these GHG emissions. Other prominent transportation GHGs include methane (CH_4) and nitrous oxide (N_2O).

There are many types of GHGs, and each GHG affects global warming differently. As a result, the Global Warming Potential (GWP) metric was developed to allow comparisons of the global warming impacts of different GHGs. Specifically, it is a measure of how much energy the emissions of 1 ton of a gas will absorb over a given period, relative to the emissions of 1 ton of CO_2. The larger the GWP, the more that a given gas warms Earth compared to CO_2 over that period. The time period used for GWPs is typically 100 years. GWPs provide the following common units of measure, allowing analysts to sum emission estimates of different gases (e.g., to compile a national GHG inventory) for comparison and to identify reduction opportunities:

- CO_2, by definition, has a GWP of 1 regardless of the period used. CO_2 remains in the atmosphere for a long time. CO_2 emissions cause increases in atmospheric CO_2 concentrations that will last thousands of years.
- CH_4 has a GWP 25 times that of CO_2 for a 100-year period. CH_4 emitted today lasts about a decade, which is a shorter period than CO_2. However, CH_4 absorbs much more energy than CO_2. The net effect of the shorter lifetime and higher energy absorption is reflected in the GWP. The CH_4 GWP also accounts for indirect effects, such as the fact that CH_4 is a precursor to O_3, and O_3 is itself a GHG.
- N_2O has a GWP 298 times that of CO_2 for a 100-year period. N_2O emitted today remains in the atmosphere for more than 100 years.

GHGs are reported in CO_2 Equivalents (CO_2e), which is a combined measure of GHG emissions weighted according to the GWP of each gas, relative to CO_2. CO_2e is calculated within USEPA's Motor Vehicle Emission Simulator (MOVES2014b) model from CO_2, N_2O, and CH_4 mass emissions according to the following equation:

$$\boldsymbol{CO_2e} = CO_2 \times GWP_{CO2} + CH_4 \times GWP_{CH4} + N_2O \times GWP_{N2O}$$

[13] Intergovernmental Panel on Climate Change. 2007. *Climate Change 2007: The Physical Science Basis*. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change [Solomon, S., D. Qin, M. Manning, Z. Chen, M. Marquis, K.B. Avery, M. Tignor and H.L. Miller (eds.)]. Cambridge University Press, Cambridge, United Kingdom and New York, NY, USA, 996 pp. https://www.ipcc.ch/report/ar4/wg1/.

10.1.7 Methodology

Air quality mesoscale, MSAT, and GHG analyses were conducted to determine how the Project would affect total mobile source emissions. Air quality was also analyzed on a local (microscale) level to evaluate potential CO and PM impacts. The mesoscale analysis was conducted to show the differences between the No Action Alternative and the CBD Tolling Alternative, whereas the local analysis demonstrated that the hot-spot requirements are satisfied for Project-level conformity per the CAA as well as for NEPA.

Analyses were conducted for the estimated time of completion (2023) and future analysis year (2045). It should be noted that the year 2023 No Action Alternative is also representative of existing conditions, as the Project will be implemented in a relatively short time period.

10.1.7.1 Mesoscale, MSAT, and GHG Analysis

USEPA's emission model, MOVES2014b, was used to estimate the mobile source emission factors for the mesoscale, MSAT, and GHG analyses. MOVES2014b provides great flexibility to capture the influence of time of day, car and bus/truck activity, vehicle speeds, and seasonal weather effects on emission rates from vehicles. MOVES2014b calculates emission-related parameters, such as total mass emissions and vehicle activity (hours operated and miles traveled). From this output, emission rates (e.g., grams/vehicle-miles for moving vehicles or grams/vehicle-hours for idling vehicles) can be determined for a variety of vehicle activities.

MOVES2014b requires site-specific input data for traffic volumes, vehicle types, fuel parameters, age distribution, and other inputs. By using site-specific data, the emission results reflect the traffic characteristics of the roadways affected by the Project. **Appendix 10A, "Air Quality: Description of Pollutants and MOVES Modeling Files,"** provides electronic versions of all the MOVES modeling conducted for the Project.[14]

The regional study area for the Project includes 28 counties in the New York City region (for more information on the 28-county regional study area, see **Chapter 3, "Environmental Analysis Framework"**). These 28 counties represent the main catchment area for trips to and from the Manhattan CBD and therefore the area where VMT would change as a result of the CBD Tolling Alternative.

Based on the methodology used to identify the most concentrated areas of change, the following 12 New York and New Jersey counties were used for the air quality mesoscale, MSAT, and GHG analyses for the Project:

- New York City:
  - Bronx
  - Kings (Brooklyn)
  - New York (Manhattan) / Manhattan CBD
  - Queens
  - Richmond (Staten Island)

[14 Located at https://new.mta.info/project/CBDTP/environmental-assessment.]

- Long Island:
  - Nassau
  - Suffolk
- North of New York City:
  - Putnam
  - Rockland
  - Westchester
- New Jersey:
  - Hudson
  - Bergen

As shown in **Table 10-3**, the 12 counties analyzed include those in New York that are projected to have the largest increase in VMT (Richmond County [Staten Island]) and the largest decrease in VMT (New York County [Manhattan]) as a result of the Project, as well as those counties in New Jersey that are predicted to have the largest increase in VMT (Bergen County) and the largest decrease in VMT (Hudson County) as a result of the Project, in both 2023 and 2045. VMT in Connecticut is predicted to decrease in both 2023 and 2045 between the No Action Alternative and the CBD Tolling Alternative; as such, Connecticut counties were not included in the mesoscale, MSAT, and GHG analyses.

MOVES2014b was used to estimate emissions of criteria pollutants, MSATs, GHG, and energy from the mesoscale roadway network in the 12-county region. The ***[New York State Department of Environmental Conservation]*** (NYSDEC) has developed county-specific MOVES input data, and Project travel-demand analysts provided the traffic forecasts for each tolling scenario considered in the transportation analysis.

Table 10-4 and Table 10-5 describe the specific MOVES2014b inputs. County-specific data and Project-specific traffic data were used to develop Project-specific input files to demonstrate the effects of the CBD Tolling Alternative. The mesoscale, MSAT, and GHG analyses evaluated the No Action Alternative and the CBD Tolling Alternative (Tolling Scenario A) for the estimated time of completion (2023) and future analysis year (2045). Tolling Scenario A was used for the mesoscale, MSAT, and GHG analyses because it is the tolling scenario that would result in the smallest reduction of VMT compared to the No Action Alternative. Therefore, Tolling Scenario A would have the lowest beneficial effect on regional air quality because changes in regional air quality emissions burden are directly related to changes in VMT. As discussed in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** traffic data from 2019 were considered to be representative for 2023. These data were used in the emissions model to estimate 2023 emissions. Final Project-specific traffic data were received in October 2021. All other input parameters were received in July 2019, provided by the agencies highlighted in **Table 10-5**, and represent the latest and best planning assumptions at the time the analysis was initiated, which was 2019.

Table 10-3. Comparison of County-Level Vehicle-Miles Traveled in the Regional Study Area, No Action Alternative and CBD Tolling Alternative (Tolling Scenario A, Years 2023 and 2045)

COUNTY	2023 DAILY VEHICLE-MILES TRAVELED			2045 DAILY VEHICLE-MILES TRAVELED		
	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	Difference	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	Difference
New York City						
Bronx, NY	7,590,398	7,600,486	0.13%	8,178,443	8,179,258	0.01%
Kings (Brooklyn), NY	10,015,002	9,962,630	-0.52%	10,482,095	10,429,946	-0.50%
New York (Manhattan), NY	7,128,128	6,794,749	-4.68%	7,560,139	7,230,456	-4.36%
Queens, NY	18,410,148	18,313,242	-0.53%	19,368,110	19,229,630	-0.71%
Richmond (Staten Island), NY	3,986,457	4,071,055	2.12%	4,158,480	4,235,660	1.86%
Long Island						
Nassau, NY	19,687,535	19,698,668	0.06%	21,724,946	21,682,338	-0.20%
Suffolk, NY	21,898,009	21,910,738	0.06%	25,088,580	25,069,954	-0.07%
New York Counties North of New York City						
Dutchess, NY	5,114,706	5,114,150	-0.01%	5,303,106	5,298,706	-0.08%
Orange, NY	8,064,737	8,042,718	-0.27%	8,861,047	8,834,459	-0.30%
Putnam, NY	2,029,067	2,030,526	0.07%	2,239,945	2,226,281	-0.61%
Rockland, NY	4,772,318	4,762,333	-0.21%	5,679,602	5,661,212	-0.32%
Westchester, NY	13,489,991	13,451,007	-0.29%	15,541,871	15,471,203	-0.45%
NEW YOR STATE TOTAL	122,186,496	121,752,302	-0.36	134,186,364	133,549,103	-0.47

COUNTY	2023 DAILY VEHICLE-MILES TRAVELED			2045 DAILY VEHICLE-MILES TRAVELED		
	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	Difference	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	Difference
New Jersey Counties						
Bergen, NJ	13,728,764	13,879,578	1.10%	15,423,121	15,552,792	0.84%
Essex, NJ	9,979,337	9,935,201	-0.44%	11,361,522	11,317,134	-0.39%
Hudson, NJ	4,784,360	4,667,087	-2.45%	5,440,776	5,343,189	-1.79%
Hunterdon, NJ	4,133,193	4,133,747	0.01%	4,338,874	4,338,931	0.00%
Mercer, NJ	6,389,692	6,392,871	0.05%	6,503,376	6,495,154	-0.13%
Middlesex, NJ	13,089,664	13,114,154	0.19%	14,698,322	14,749,616	0.35%
Monmouth, NJ	6,877,937	6,883,108	0.08%	7,685,824	7,709,731	0.31%
Morris, NJ	8,738,129	8,768,247	0.34%	9,665,262	9,651,535	-0.14%
Ocean, NJ	4,207,545	4,205,186	-0.06%	4,370,243	4,370,004	-0.01%
Passaic, NJ	5,588,180	5,602,293	0.25%	6,213,768	6,213,808	0.00%
Somerset, NJ	5,239,808	5,225,201	-0.28%	5,951,792	5,943,608	-0.14%
Sussex, NJ	1,859,459	1,854,014	-0.29%	1,899,412	1,897,707	-0.09%
Union, NJ	8,105,458	8,076,600	-0.36%	9,255,263	9,236,597	-0.20%
Warren, NJ	4,856,570	4,857,644	0.02%	5,100,281	5,094,874	-0.11%
NEW JERSEY TOTAL	97,578,096	97,594,931	0.02	107,907,836	107,914,680	0.01
Connecticut Counties						
Fairfield, CT	14,696,567	14,686,082	-0.07%	16,284,959	16,277,217	-0.05%
New Haven, CT	20,213,303	20,192,591	-0.10%	18,778,510	18,768,017	-0.06%
CONNECTICUT TOTAL	34,909,870	34,878,673	-0.09	35,063,469	35,045,234	-0.05

Source: WSP.
Note: State totals may differ slightly from VMT reported in other chapters due to rounding and summing by different geographies.

Table 10-4. MOVES2014b Input Parameters

MOVES TAB	MODEL SELECTIONS
Scale	▪ County scale ▪ Inventory calculation type
Time Span	Hourly time aggregation, including all months, days, and hours
Geographic Bounds	Each of the 12 individual counties analyzed
Vehicles/Equipment	All on-road vehicle and fuel type combinations were selected for criteria pollutant and mobile source air toxics runs; only diesel was selected for diesel particulate matter runs.
Road Type	All road types were selected (off-network, rural restricted, rural unrestricted, urban restricted, and urban unrestricted)
Pollutants and Processes	▪ Selected pollutants included criteria pollutants, mobile source air toxics, CO_2 equivalent, and their precursors. ▪ Processes included running exhaust, evaporative permeation, evaporative fuel leaks, and crankcase running exhaust. Brake-wear and tire-wear emissions are included in the particulate matter results.
Manage Input Data Sets	New York counties: Selected New York State Low Emission Vehicle program input database provided by New York State Department of Environmental Conservation. New Jersey counties: Selected EPA default Lowe Emission Vehicle program input database.
Output	Output was total annual emission by county.

Source: WSP.

Table 10-5. MOVES2014b County Data Manager Inputs

COUNTY DATA MANAGER TAB	DATA SOURCE
Age Distribution	New York State Department of Environmental Conservation (NYSDEC) and North Jersey Transportation Planning Authority (NJTPA)
Inspection/Maintenance Programs	NYSDEC and NJTPA
Ramp Fraction	NYSDEC and NJTPA
Source Type Population	NYSDEC data scaled using New York Metropolitan Transportation Council growth factors and NJTPA
Fuel	NYSDEC and NJTPA
Meteorology Data	NYSDEC and NJTPA
Hoteling	NYSDEC and NJTPA
Average Speed Distribution	Created from Project traffic data received in November 2021
Annual Vehicle-Miles Traveled (VMT)	Created from Project traffic data received in November 2021
Monthly VMT Fraction	Created from New York Metropolitan Transportation Council monthly adjustment factors and NJTPA
Daily VMT Fraction, Hourly VMT Fraction	NYSDEC and NJTPA
Road Type Distribution	NYSDEC and NJTPA

Source: WSP.

10.1.7.2 Microscale Analysis

The microscale analysis was performed in accordance with FHWA's NEPA implementing regulations and procedures and USEPA's regulatory guidance and procedures.

An initial review of all the tolling scenarios was conducted to determine the tolling scenario that demonstrates the highest traffic volume increases on the local streets. As a result of this initial review, a screening analysis was conducted primarily based on Tolling Scenario D. This is the tolling scenario that

would have the highest traffic volume increases on the local streets, based on the results of the traffic modeling conducted for this Project (and is representative of the similar levels of traffic changes projected for Tolling Scenarios E and F). The only exception to this is the midday period in Downtown Brooklyn, which has the highest traffic volume increases on the local streets under Tolling Scenario C. The screening procedures were conducted for those pollutants that are of concern on a localized (or microscale) level: CO, PM_{10}, and $PM_{2.5}$. The screening was performed to determine whether detailed microscale modeling for CO, PM_{10}, or $PM_{2.5}$ would be required to assess the potential air quality effects of the Project. The screening was conducted using the criteria from the NYSDOT *The Environmental Manual* (TEM), Chapter 1.1.[15]

10.1.7.3 Carbon Monoxide Screening

Following NYSDOT's TEM, Chapter 1.1, a CO microscale/hot-spot screening procedure was used to screen the intersections predicted to be affected by the Project. As per the referenced guidance, if an intersection is predicted to have a build LOS C or better, the intersection is deemed to pass the screening, and no CO analysis is warranted.

If the intersection is predicted to have LOS D or below in a build alternative, the intersection is further screened by the following criteria:

- A 10 percent or more reduction in the source-receptor distance[16]
- A 10 percent or more increase in traffic volume on affected roadways
- A 10 percent or more increase in vehicle emissions
- Any increase in the number of queued lanes
- A 20 percent reduction in speed, when predicted average speed is at 30 miles per hour or less

If any of the intersections affected by a project meet or exceed any of these criteria, volume threshold screening (vehicle threshold tables that tie the volume threshold with emission factors, as detailed in NYSDOT's TEM, Chapter 1.1, Section I-3) is applied. The emission factors applied within this screening would come from USEPA's MOVES2014b emission factor program and represent the 2023 analysis year. If any intersection exceeds the traffic volume thresholds in NYSDOT's TEM, then a CO hot-spot analysis is conducted following the procedures in NYSDOT's TEM, Chapter 1.1.

10.1.7.4 Particulate Matter Screening (Determining Project of Air Quality Concern)

Following NYSDOT's TEM, Chapter 1.1 (Section 8), and in accordance with USEPA's October 2021 guidance, *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas*, a project requires a quantitative particulate matter analysis if it is deemed to be a "Project of Air Quality Concern," based on the screening analysis presented in **Section 10.3.2.2**.

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15 https://www.dot.ny.gov/divisions/engineering/environmental-analysis/manuals-and-guidance/epm.

16 In this case, source-receptor distance is the distance between a roadway and a sensitive receptor such as a house, school, etc. Because the Project is not widening any roadways or creating additional travel lanes, distances between sources and receptors would not change due to the Project.

Projects that require a quantitative $PM_{2.5}$ and PM_{10} hot-spot analysis, as defined in Section 93.123(b)(1) of the conformity rule, include the following:

- New highway projects that have a significant number of diesel vehicles and expanded highway projects that have a significant increase in the number of diesel vehicles – *not applicable to this Project*.
- Projects affecting intersections that are at LOS D, E, or F with a significant number of diesel vehicles, or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to a project – *potentially applicable to this Project; screening analysis was conducted*.
- New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location – *not applicable to this Project*.
- Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location – *not applicable to this Project*.
- Projects in or affecting locations, areas, or categories of sites which are identified in the $PM_{2.5}$ or PM_{10} applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation – *not applicable to this Project*.

For this Project, the screening analysis included all 102 intersections evaluated in the traffic analysis (**Chapter 4B, "Transportation: Highways and Local Intersections"**).

Federal USEPA guidance for hot-spot $PM_{2.5}$ and PM_{10} analyses does not define a "significant increase in diesel trucks"; as such, a screening was performed to compare the maximum hourly changes in heavy-duty diesel vehicles for the intersections that would demonstrate a LOS of D or worse under the CBD Tolling Alternative (Tolling Scenario D and Tolling Scenario C where applicable) compared to the No Action Alternative. For this analysis, heavy-duty diesel vehicles included medium-duty trucks, heavy-duty trucks, and buses.

10.1.7.5 Highway Link Analyses

In response to concerns raised during public engagement for the Project, the effects of the link-level highway segments on localized communities—particularly on the Cross Bronx Expressway in the vicinity of Macombs Road and on the Franklin D. Roosevelt (FDR) Drive near 10th Street—were analyzed.

Microscale CO screening was conducted at the FDR Drive location following NYSDOT's TEM Volume Threshold Screening. Because the FDR Drive does not allow trucks, a microscale particulate matter screening or analysis was not warranted at that location.

Microscale particulate matter analyses were conducted following USEPA's October 2021 guidance, *Transportation Conformity Guidance for Quantitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas*. These analyses were conducted at the Cross Bronx Expressway in the vicinity of Macombs Road and at two other locations representing those areas with the highest increases in truck traffic due to the Project and the highest AADT with the Project under all tolling scenarios and for all links

analyzed in the mesoscale analysis (see **Table 10B-27** and **Table 10B-28** in **Appendix 10B, "Air Quality: Project-Level Hot-Spot Screening Procedure"**).

Details of the PM methodology, interagency consultation, and site selection are contained within **Appendix 10C, "Air Quality: Highway Link PM Hot-Spot Detailed Assessment (Methodology, Interagency Consultation & Results)."**

10.2 AFFECTED ENVIRONMENT

The regional study area for the traffic analyses includes a total of 28 counties in New York, New Jersey, and Connecticut. To provide background on existing air quality conditions in the study area, monitored air quality data collected by USEPA, per the CAA, around New York City and New Jersey was compiled and is presented in **Table 10-6**. **Figure 10-2** shows the USEPA monitoring locations closest to the regional study area. As shown in **Table 10-6**, when compared to the NAAQS presented in **Table 10-1**, there were several exceedances of the O_3 standard of 0.070 ppm, but no exceedances of any of the other criteria pollutants.

In addition to the USEPA monitoring used to assess compliance with the NAAQS, the New York City Department of Health and Mental Hygiene and Queens College of the City University of New York are conducting the NYCCAS, a program to monitor air quality across New York City. During public outreach, participants expressed interest in utilizing this information to characterize the air quality conditions in each neighborhood.

The purpose of NYCCAS is to better understand air pollution levels and patterns by revealing how pollution from traffic, buildings, and other sources varies among the city's neighborhoods. This helps identify which neighborhoods have the highest pollutant levels and where changes can be made to improve air quality. The difference in monitored values between the USEPA information and the NYCCAS information is due to different collection methods and averaging periods reported. NYCCAS data does not meet the regulatory requirements of a USEPA monitor and cannot be used to determine compliance with the NAAQS, or as a background value for regulatory modeling. It does, however, indicate the general air quality trend.

There are about 100 NYCCAS air pollution monitors[17] installed throughout the five boroughs, with at least one in each Community District. Many are in neighborhoods with high traffic volumes and high building density. Others are in quieter locations with fewer buildings. Some monitors are placed near unique facilities, like bus depots and ferry terminals.

[17] More information on the monitors can be found at https://www1.nyc.gov/site/doh/data/data-sets/air-quality-nyc-community-air-survey.page.

Table 10-6. Ambient Air Quality Monitored Data

MONITORING LOCATION			MANHATTAN BRONX PS 124 40 Division St., Manhattan 160 Convent Ave., Manhattan IS 52 681 elly St., Bronx			BROO LYN QUEENS JHS 126 424 Leonard St., Brooklyn Queens College 65-30 issena Blvd., Queens			NEW JERSEY JCFD Engine 5/Ladder 6 355 Newark Ave., Jersey City 2828 JF Blvd., Jersey City Overpeck Park 40 Fort Lee Rd., Leonia		
			2017	2018	2019	2017	2018	2019	2017	2018	2019
Carbon Monoxide (CO) ppm	1-hour	Maximum	1.6	2.9	1.8	1.7	1.9	1.5	2.0	5.1	3.2
		2nd Maximum	1.4	2.5	1.6	1.3	1.7	1.4	1.7	4.8	2.1
		of Exceedances	0	0	0	0	0	0	0	0	0
	8-hour	Maximum	1.1	1.7	1.3	0.9	1.3	1.1	1.1	3.2	1.2
		2nd Maximum	0.9	1.2	1.1	0.9	1.2	1.1	1.1	1.6	1.2
		of Exceedances	0	0	0	0	0	0	0	0	0
Particulate Matter (PM) ug/m^3	PM_{10}	Maximum 24 hours	35	40	43	30	38	28	36	44	42
		2nd Maximum	31	38	29	28	29	23	32	33	34
		of Exceedances	0	0	0	0	0	0	0	0	0
	$PM_{2.5}$	24-hour 98th percentile	18	22	20	17	18	18	21	21	25
		Mean Annual	8.8	9.6	8.6	7.5	7.9	7.6	10.3	9.5	8.9
Ozone (O_3) ppm	8-hour	1st Highest	0.077	0.086	0.081	0.086	0.082	0.076	0.082+	0.091+	0.085+
		2nd Highest	0.073	0.082	0.071	0.080	0.080	0.072	0.079+	0.090+	0.073+
		3rd Highest	0.070	0.078	0.067	0.079	0.076	0.072	0.074+	0.081+	0.072+
		4th Highest	0.070	0.077	0.066	0.079	0.073	0.071	0.074+	0.079+	0.071+
		of days standard exceeded	2 .	10	2	6	8	4	7+	13+	4+
Nitrogen Dioxide (NO_2) ppb	1-hour Maximum		64	79	67	79	69	61	70	85	83
	1-hour second Maximum		64	78	66	69	66	60	59	82	73
	98th Percentile		59	59	58	59	53	54	53	58	56
	Annual Mean		17.3	17.5	16.9	15.3	14.4	14.2	20.2	19.2	21.2
Sulfur Dioxide (SO_2) ppb	1-hour Maximum		12.2	12.9	7.2	5.7	8.1	6.5	8	6.4	6.3
	24-hour Maximum		3	6.3	2.4	2.3	3.2	2.7	4.1	4.1	3.5
	of days standard exceeded		0	0	0	0	0	0	0	0	0

Source: U.S. Environmental Protection Agency AirData.

Notes:

- 2020 and 2021 data not included due to potential impacts of COVID-19 pandemic on traffic and pollutant levels.
- Manhattan & Bronx data from PS 124 unless noted as follows: *160 Convent Avenue; ^^681 Kelly Street.
- Brooklyn & Queens data from JHS 126 unless noted as follows: ^Queens College.
- New Jersey data from JCFD Engine 5/Ladder 6 unless noted as follows: **2828 JFK Blvd; +Overpeck Park.

Figure 10-2. U.S. Environmental Protection Agency Ambient Air Quality Monitoring Locations

Source: WSP.

The following key findings are the result of the NYCCAS monitoring over the past decade:

- Annual average levels of four key pollutants have decreased citywide between the first year of monitoring (2009) and the most recent year of data (2019):
  - $PM_{2.5}$ (fine particulate matter): -38 percent (**Figure 10-3**)
  - NO_2: -33 percent
  - Nitric Oxide: -52 percent
  - Black Carbon: -38 percent
- Air quality improved substantially after the City of New York required building owners to convert to cleaner heating oils by 2015; since the first winter of monitoring, average levels of SO_2 have declined by 95 percent.

Figure 10-3. $PM_{2.5}$ Trends in the Study Area (2009 to 2019)

Source: https://nyccas.cityofnewyork.us/nyccas2021v9/report/2.

10.3 ENVIRONMENTAL CONSEQUENCES

10.3.1 No Action Alternative

The No Action Alternative assumes no vehicular tolling program or associated tolling infrastructure and tolling system equipment. Any changes in traffic would be a result of projected background growth and other reasonably foreseeable factors not related to the Project. **Table 10-7** shows projected emission burdens for the No Action Alternative in the 12-county area for the mesoscale analysis would decrease for most pollutants in 2045, as compared to 2023, thereby continuing the trends presented in **Figure 10-3**.

10.3.2 CBD Tolling Alternative

10.3.2.1 Mesoscale, MSAT, and GHG Analyses

Table 10-7 presents the predicted VMT and emission burdens of volatile organic compounds, nitrogen oxides, CO, PM_{10}, and $PM_{2.5}$ under the No Action Alternative and Tolling Scenario A (the tolling scenario predicted to result in the smallest change in VMT compared to the No Action Alternative).*[18]* This table also presents the emission burdens of GHGs in terms of CO_2e under the No Action Alternative and CBD Tolling Alternative. In all analysis years, the overall regional VMT and emission burdens would be lower under the CBD Tolling Alternative than the No Action Alternative. Thus, the CBD Tolling Alternative would benefit regional air quality by reducing criteria pollutants in the 12-county study area. **Table 10-8 and Table 10-9** provide the changes by county, which are depicted in **Figure 10-4** through **Figure 10-13**.

As shown in **Table 10-8**:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Rockland, and Hudson Counties estimate decreases in all pollutants with the Project in 2023.
- Suffolk, Westchester, and Putnam Counties estimate mixed results, with some pollutants increasing slightly and some pollutant burdens decreasing with the Project in 2023.
- The Bronx, Richmond (Staten Island), Nassau, and Bergen Counties estimate increases in all pollutants with the Project in 2023.

As shown in **Table 10-9**:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Suffolk, and Hudson Counties estimate decreases in all pollutants with the Project in 2045.
- The Bronx, Nassau, Westchester, Rockland, and Putnam Counties estimate mixed results with some pollutants increasing slightly and some pollutants decreasing with the Project in 2045.
- Richmond (Staten Island) and Bergen Counties estimate increases in all pollutants with the Project in 2045.

The regional emissions estimates are based on changes in VMT, speed, and vehicle mix. The interaction of these factors affects the relative decreases and increases in each county. While some counties are predicted to show increases in pollutant emissions, a local level analysis (detailed in **Section 10.3.2.2)** resulted in no intersections requiring a detailed analysis because they all passed the screening criteria.

[18 For the Final EA, the Project Sponsors committed to additional mitigation measures (see Chapter 16, "Summary of Effects," Table 16-2). These new mitigation commitments neither require a change in the tolling scenarios used for the analyses in the EA nor change the fundamental conclusions of the EA (see Chapter 3, "Environmental Assessment Framework," Section 3.3.3).]

Table 10-7. Mesoscale Emission Burdens, CBD Tolling Alternative (Tolling Scenario A, tons/year)

POLLUTANT	ANALYSIS YEAR 2023			ANALYSIS YEAR 2045		
	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	Difference	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	Difference
Daily Vehicle-Miles Traveled (miles/day)	182,736,632	182,143,856	-0.3%	201,294,782	200,421,921	-0.4%
Volatile Organic Compounds (VOC)	17,698	17,667	-0.2%	10,692	10,676	-0.2%
Nitrogen Oxides (NO_x)	23,956	23,864	-0.4%	11,195	11,169	-0.2%
Carbon Monoxide (CO)	227,726	227,074	-0.3%	117,510	117,399	-0.1%
Particulate Matter (PM_{10})	5,884	5,828	-1.0%	6,095	6,016	-1.3%
Particulate Matter ($PM_{2.5}$)	1,452	1,441	-0.7%	1,050	1,038	-1.1%
Carbon Dioxide Equivalents (CO_2e)	32,445,206	32,236,481	-0.6%	27,883,351	27,648,782	-0.8%

Source: WSP, 2022.

Note: Vehicle-miles traveled presented in this table are greater than the NYMTC Best Practice Model output as presented in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** due to a series of seasonal adjustments that were made to the travel-demand forecasts, consistent with NYMTC's procedures to generate maximum potential worst-case conditions for conformity analyses and are not applicable to evaluate general changes in travel patterns as is the purpose of **Subchapter 4A**. The NYMTC Post Processor software was used to apply Highway Performance Monitoring System reconciliation and travel-time adjustments for intersections. NYMTC's Transportation Conformity Determination includes details on these adjustments: https://www.nymtc.org/Required-Planning-Products/Transportation-Conformity/Transportation-Conformity-Determination-Documents-adopted.

Table 10-8. Mesoscale Emission Burden Percentage Changes by County, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

	ANALYSIS YEAR 2023 COMPARISON – PERCENTAGE DIFFERENCE FROM NO ACTION ALTERNATIVE												
	New York												
POLLUTANT	CBD Only	Entire County	Queens	Bronx	ings	Richmond	Nassau	Suffolk	Westchester	Rockland	Putnam	Hudson	Bergen
Daily Vehicle-Miles Traveled (miles/day)	-11.56%	-5.88%	-0.36%	+0.15%	-0.74%	+1.73%	+0.03%	-0.03%	-0.22%	-0.17%	+0.28%	-2.24%	+0.88%
Volatile Organic Compounds (VOC)	-4.96%	-3.29%	-0.32%	+0.03%	-0.32%	+0.44%	+0.05%	+0.02%	+0.21%	-0.05%	-0.03%	-0.66%	+0.20%
Nitrogen Oxides (NO_x)	-9.54%	-5.96%	-0.56%	+0.09%	-0.68%	+1.26%	+0.09%	+0.00%	-0.25%	-0.12%	+0.37%	-1.85%	+0.63%
Carbon Monoxide (CO)	-7.58%	-4.58%	-0.37%	+0.02%	-0.51%	+0.89%	+0.03%	-0.03%	-0.13%	-0.05%	+0.00%	-1.02%	+0.49%
Particulate Matter (PM_{10})	-12.16%	-9.75%	-1.23%	+0.30%	-1.00%	+2.12%	+0.19%	+0.11%	-0.32%	-0.36%	+0.31%	-3.86%	+0.74%
Particulate Matter ($PM_{2.5}$)	-11.37%	-8.52%	-0.99%	+0.20%	-0.90%	+1.80%	+0.14%	+0.06%	-0.23%	-0.25%	+0.26%	-3.00%	+0.69%
Carbon Dioxide Equivalents (CO_2e)	-11.48%	-7.92%	-0.84%	+0.15%	-0.88%	+1.76%	+0.15%	+0.03%	-0.40%	-0.23%	+0.17%	-3.03%	+0.80%

Source: WSP, 2022.

Table 10-9. Mesoscale Emission Burden Percentage Changes by County, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

	ANALYSIS YEAR 2045 COMPARISON – PERCENTAGE DIFFERENCE FROM NO ACTION ALTERNATIVE												
	New York												
POLLUTANT	CBD Only	Entire County	Queens	Bronx	ings	Richmond	Nassau	Suffolk	Westchester	Rockland	Putnam	Hudson	Bergen
Daily Vehicle-Miles Traveled (miles/day)	-11.32%	-5.71%	-0.46%	-0.05%	-1.14%	+1.83%	-0.26%	-0.04%	-0.38%	-0.41%	-0.43%	-1.59%	+0.69%
Volatile Organic Compounds (VOC)	-3.24%	-3.59%	-0.65%	+0.02%	-1.50%	+1.48%	+1.01%	-0.09%	+0.56%	-0.89%	+0.51%	-0.61%	+0.14%
Nitrogen Oxides (NO_x)	-5.89%	-5.64%	-0.83%	+0.01%	-6.97%	+8.69%	+0.49%	-0.11%	+4.45%	-2.53%	+3.79%	-1.31%	+0.36%
Carbon Monoxide (CO)	-6.55%	-3.61%	-0.42%	-0.06%	-1.00%	+1.12%	+1.37%	-0.07%	0.00%	-1.96%	-0.07%	-0.64%	+0.40%
Particulate Matter (PM_{10})	-11.55%	-10.24%	-1.55%	+0.21%	-1.72%	+2.40%	-0.51%	-0.37%	-0.75%	+5.14%	-0.25%	-3.06%	+0.67%
Particulate Matter ($PM_{2.5}$)	-11.04%	-9.42%	-1.41%	+0.16%	-1.85%	+2.51%	-0.45%	-0.31%	-0.38%	+2.44%	-0.02%	-2.48%	+0.63%
Carbon Dioxide Equivalents (CO_2e)	-10.72%	-7.80%	-0.90%	+0.05%	-1.57%	+2.04%	-0.31%	-0.23%	-0.38%	-2.82%	-0.30%	-2.34%	+0.64%

Source: WSP, 2022.

Figure 10-4. Changes in Volatile Organic Compounds, Tolling Scenario A (Analysis Year 2023)

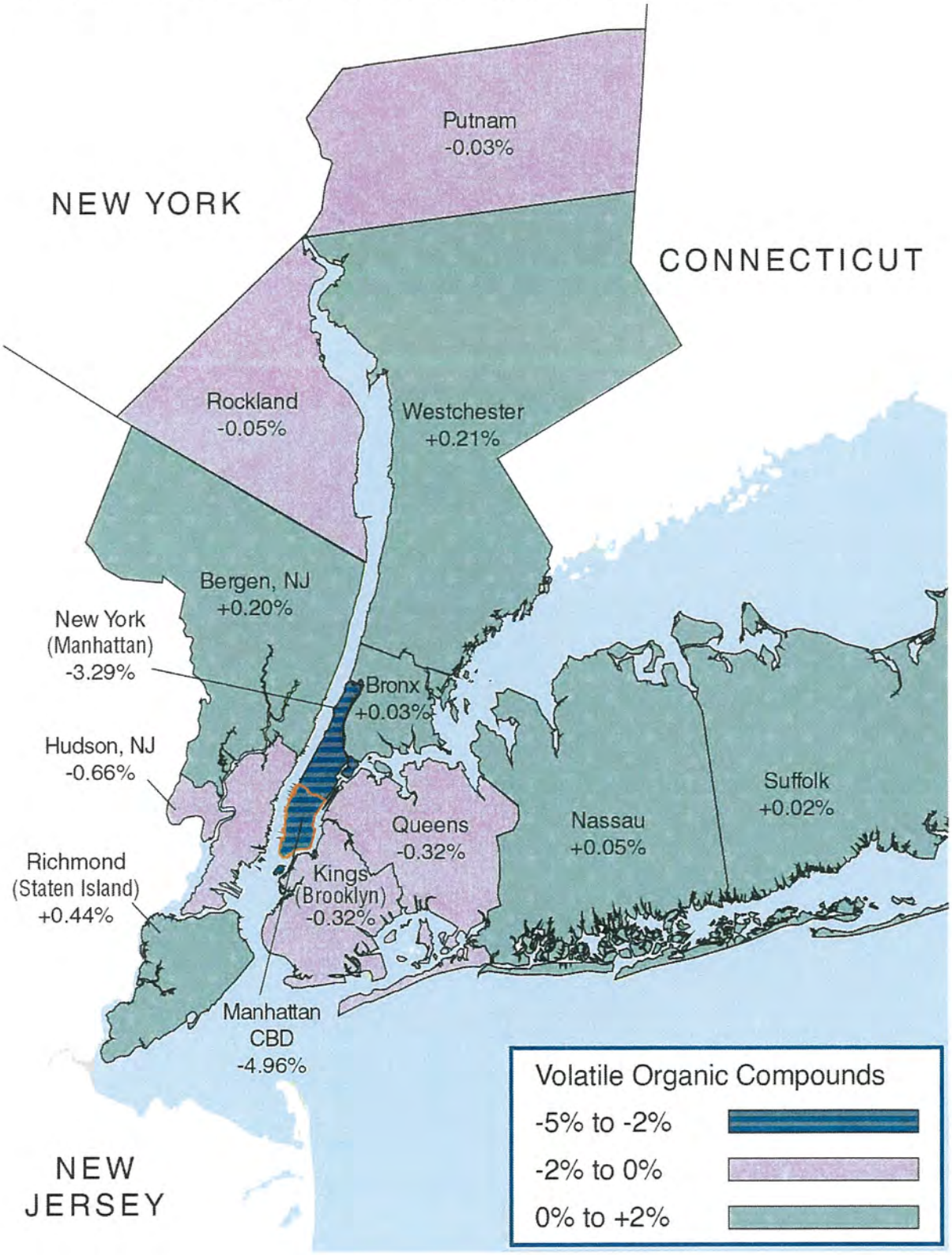


Figure 10-5. Changes in Nitrogen Oxides, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

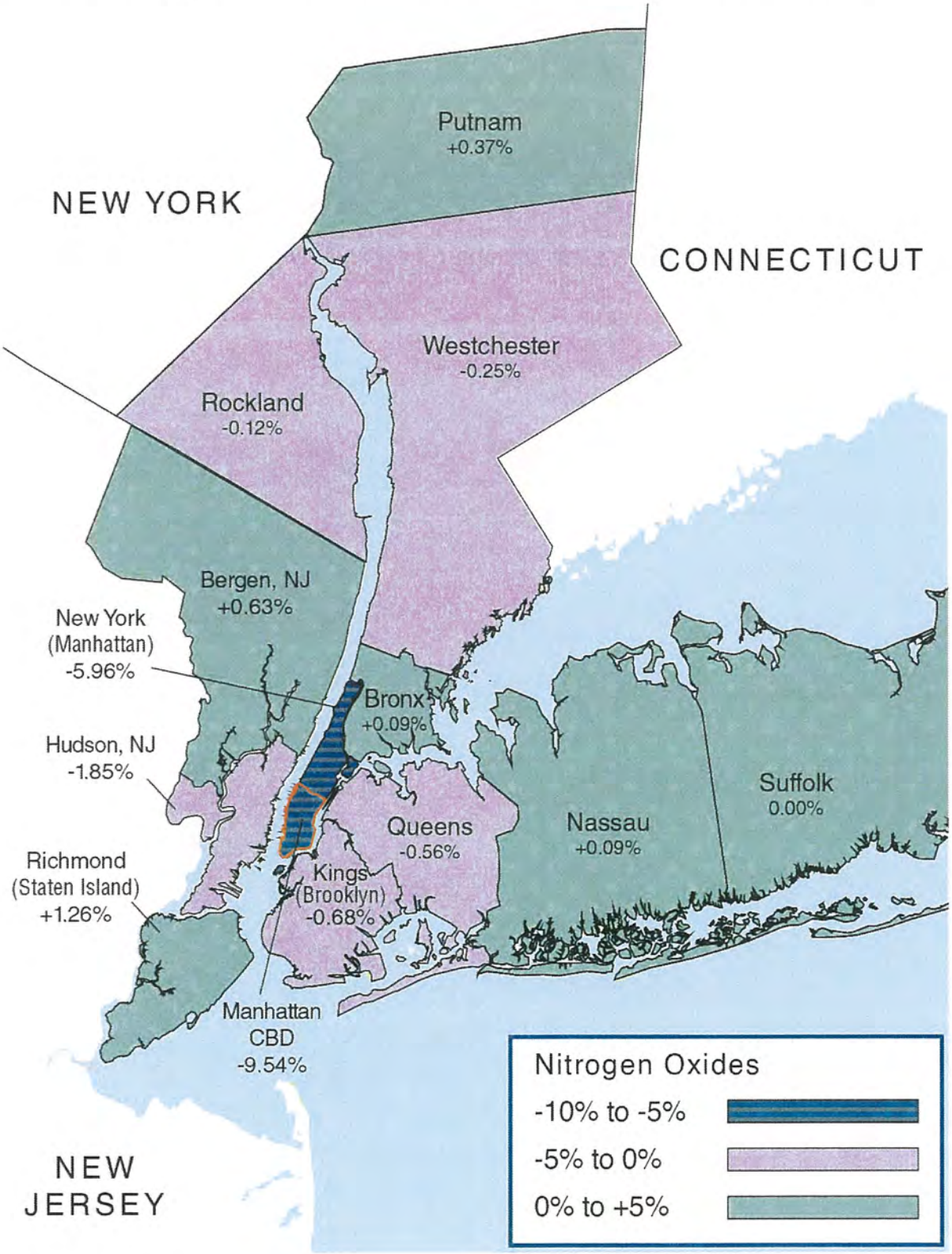


Figure 10-6. Changes in Carbon Monoxide, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

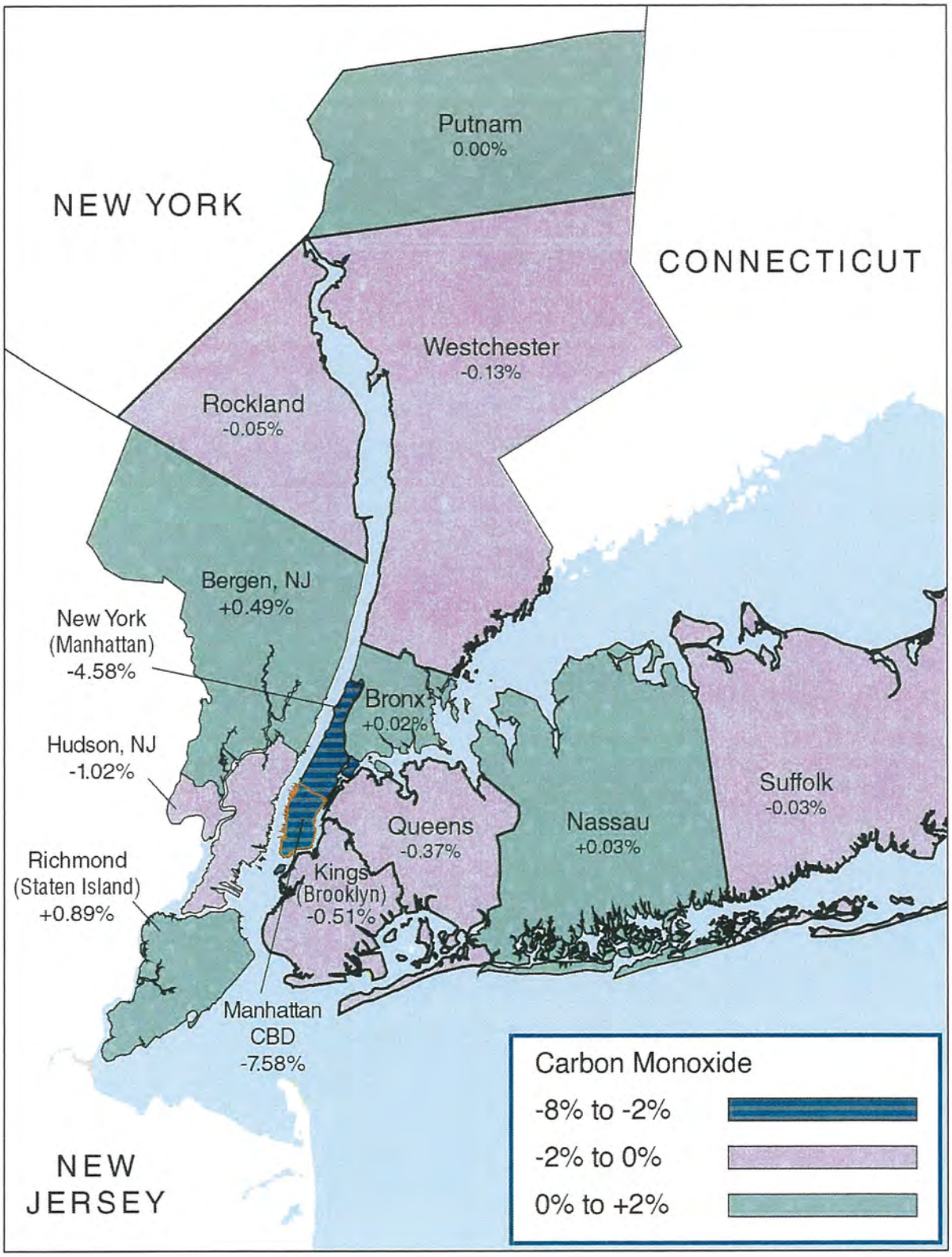


Figure 10-7. Changes in Particulate Matter 10 (PM_{10}), CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

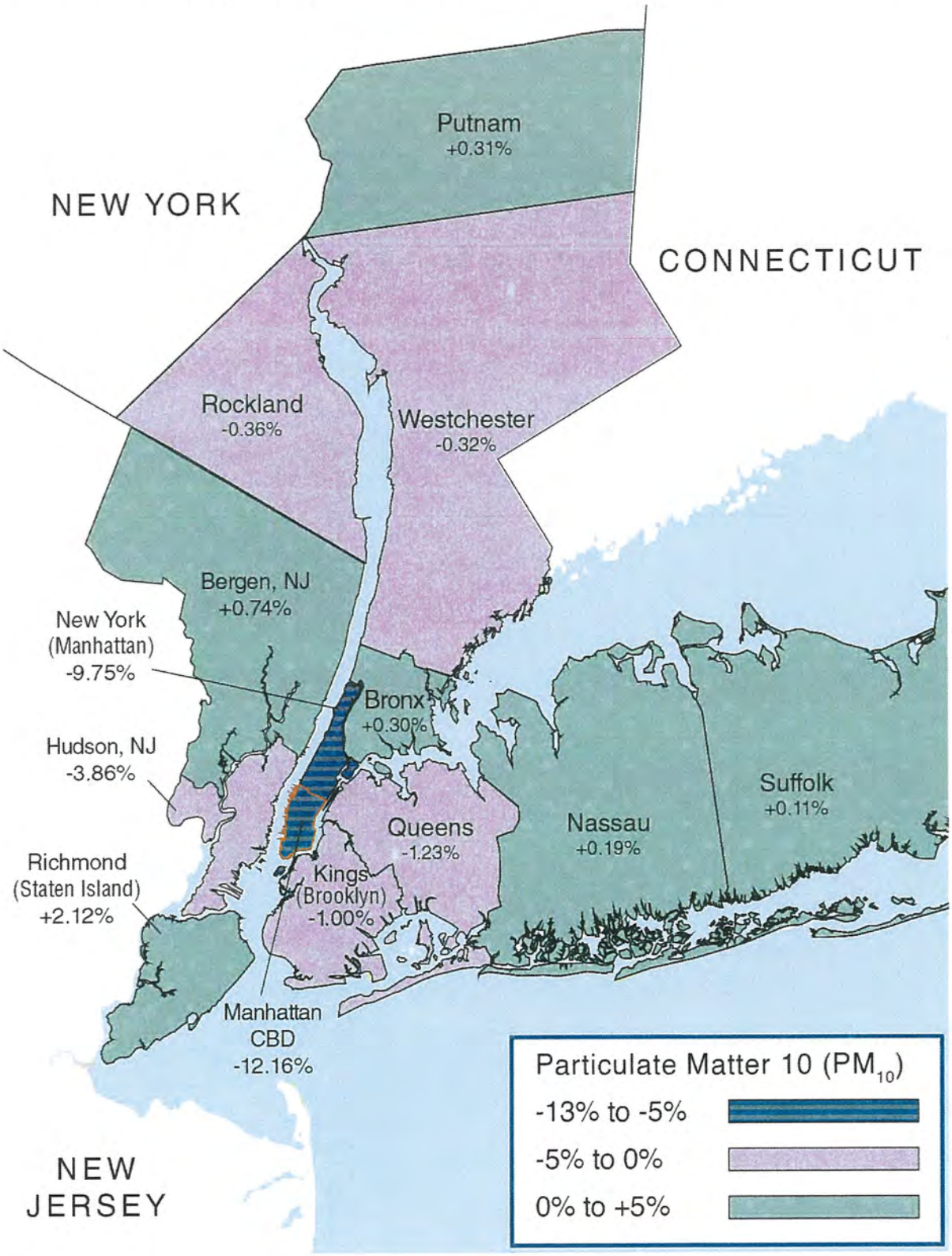


Figure 10-8. Changes in Particulate Matter 2.5 ($PM_{2.5}$), CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

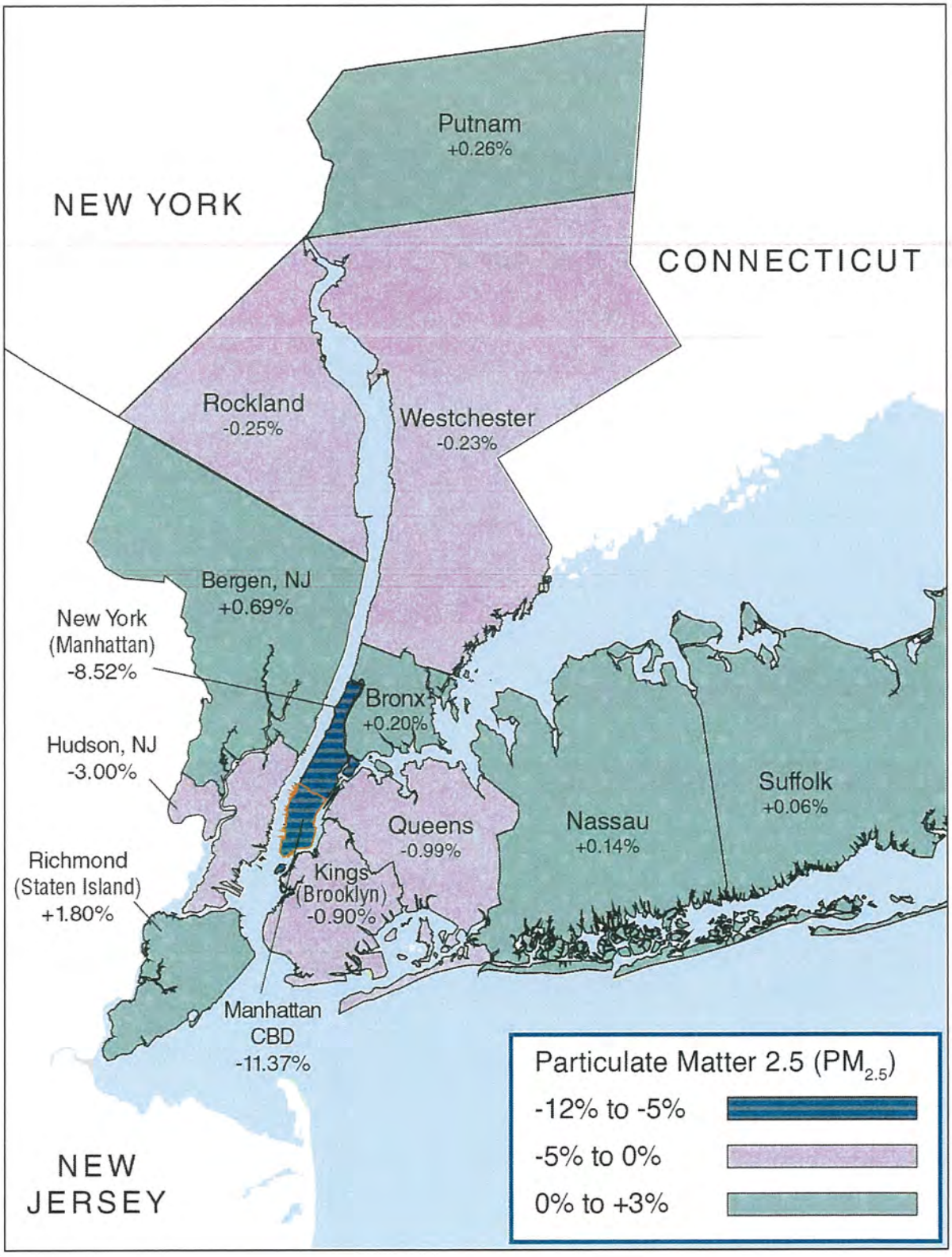


Figure 10-9. Changes in Volatile Organic Compounds, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

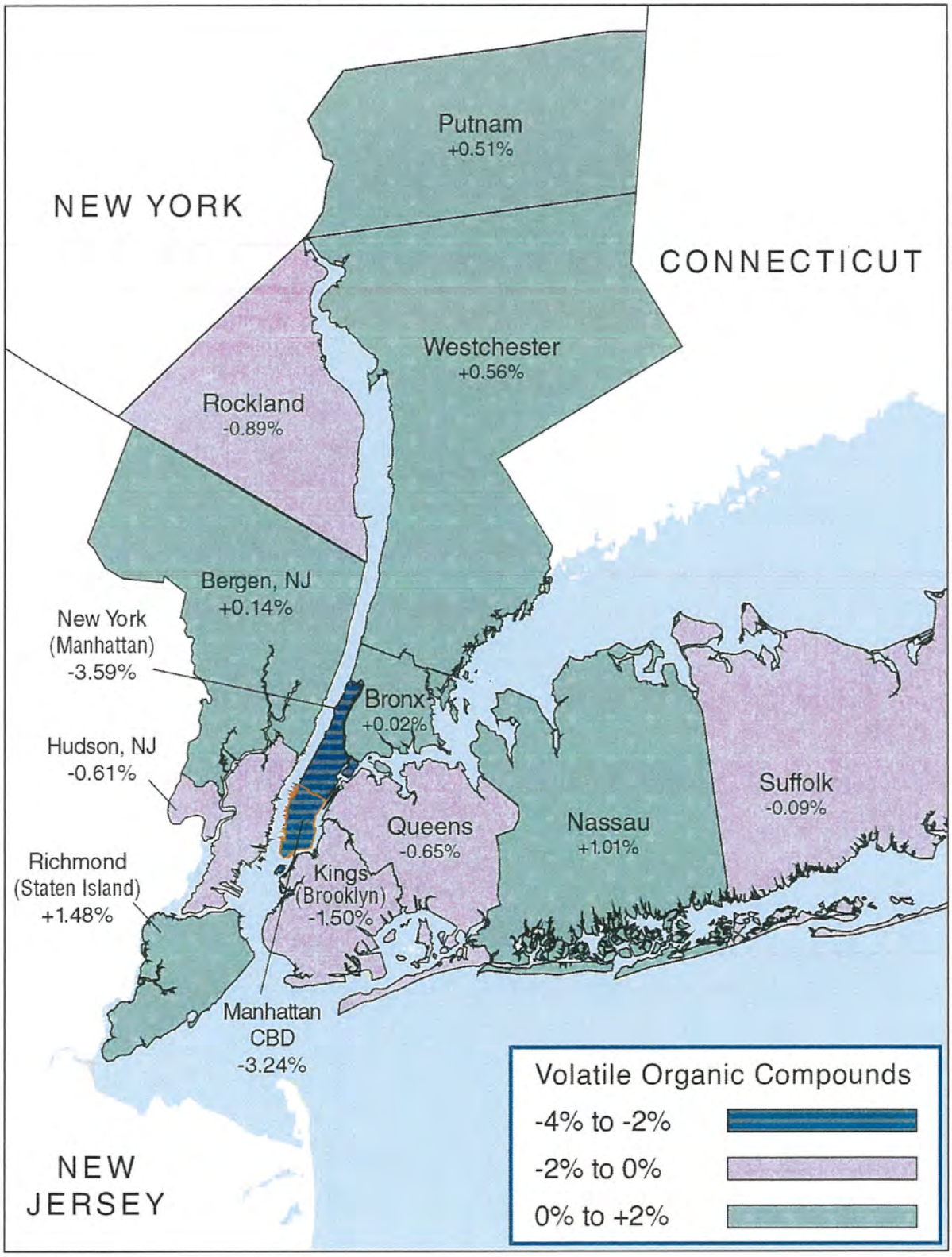


Figure 10-10. Changes in Nitrogen Oxides, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

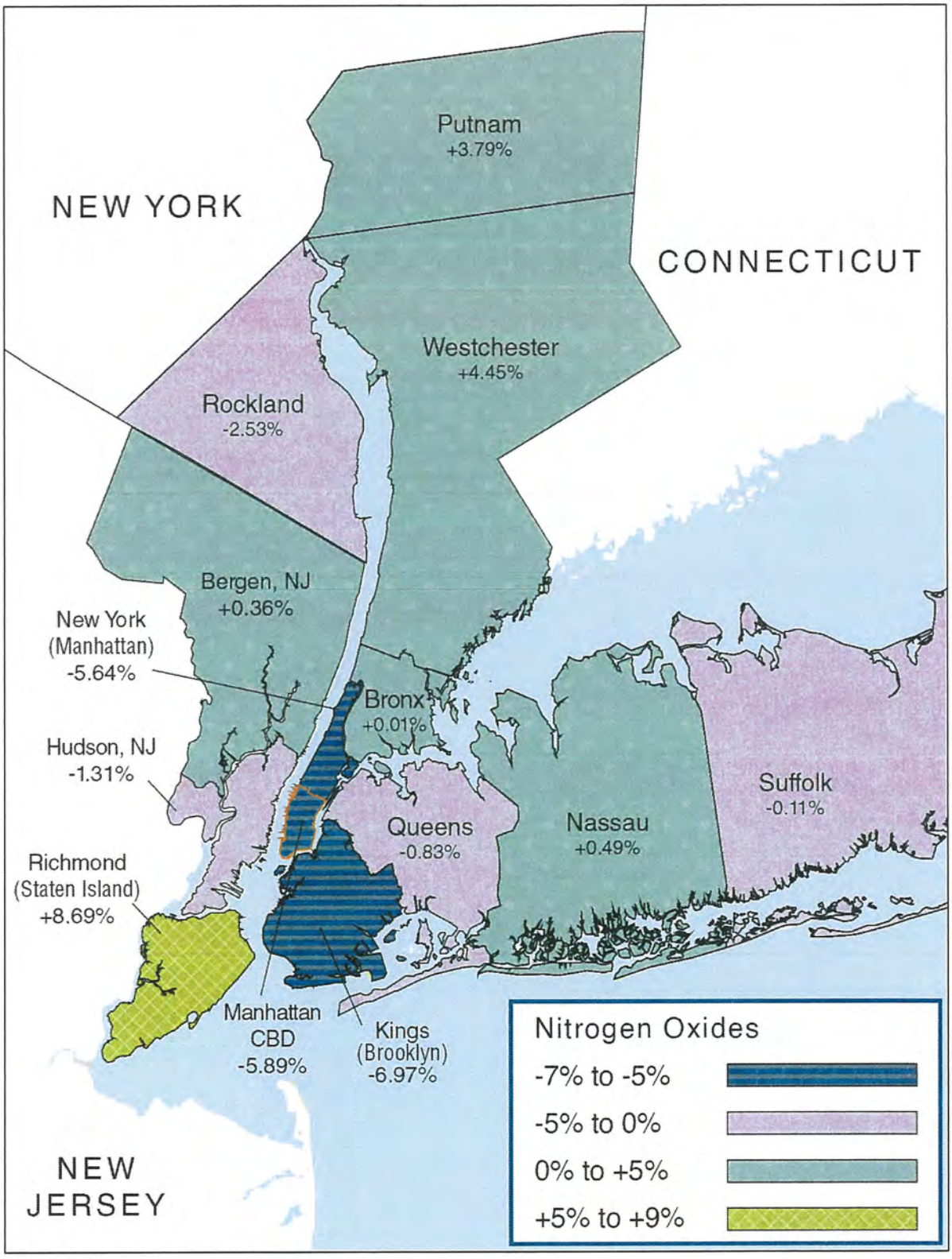


Figure 10-11. Changes in Carbon Monoxide, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

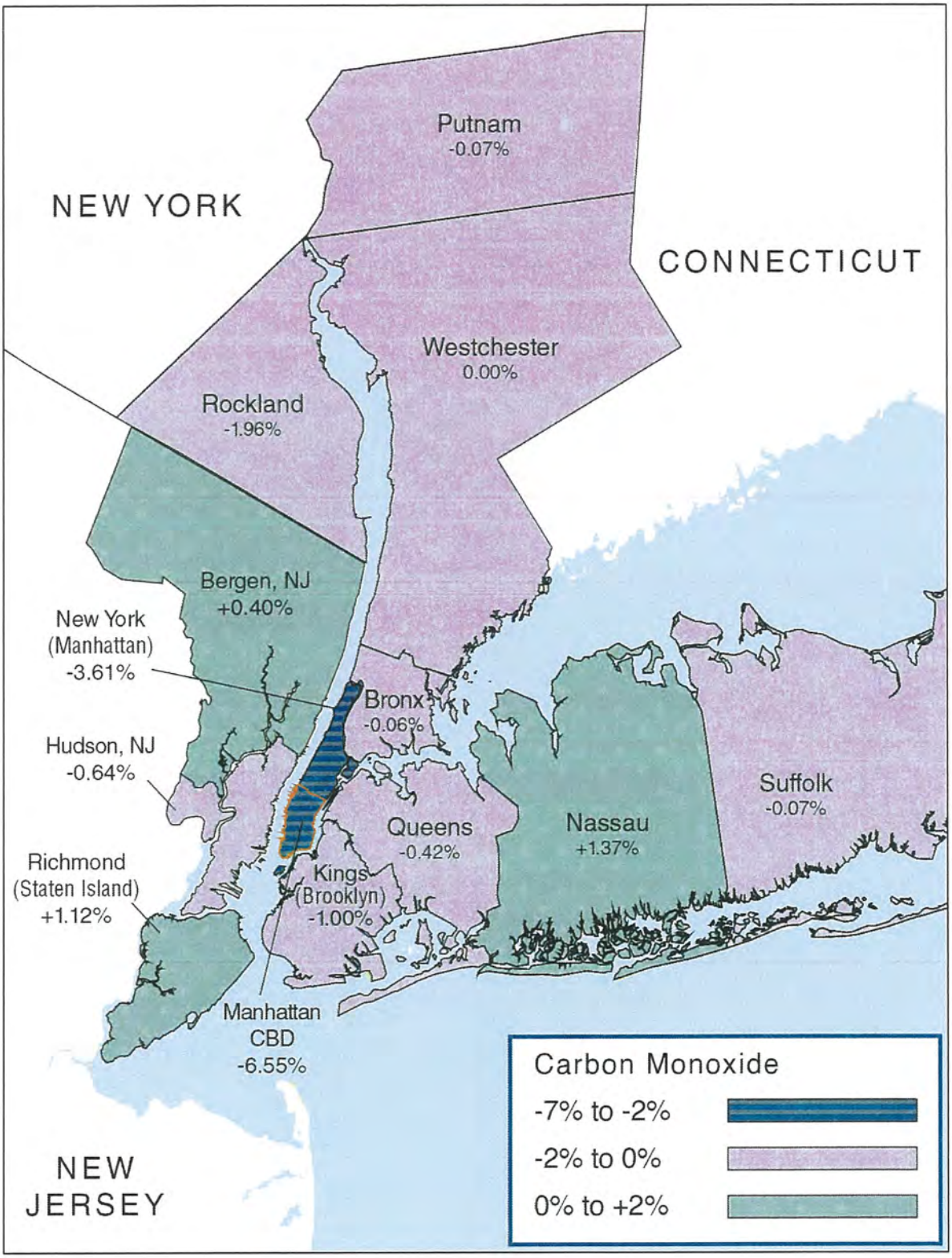


Figure 10-12. Changes in Particulate Matter 10 (PM_{10}), CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

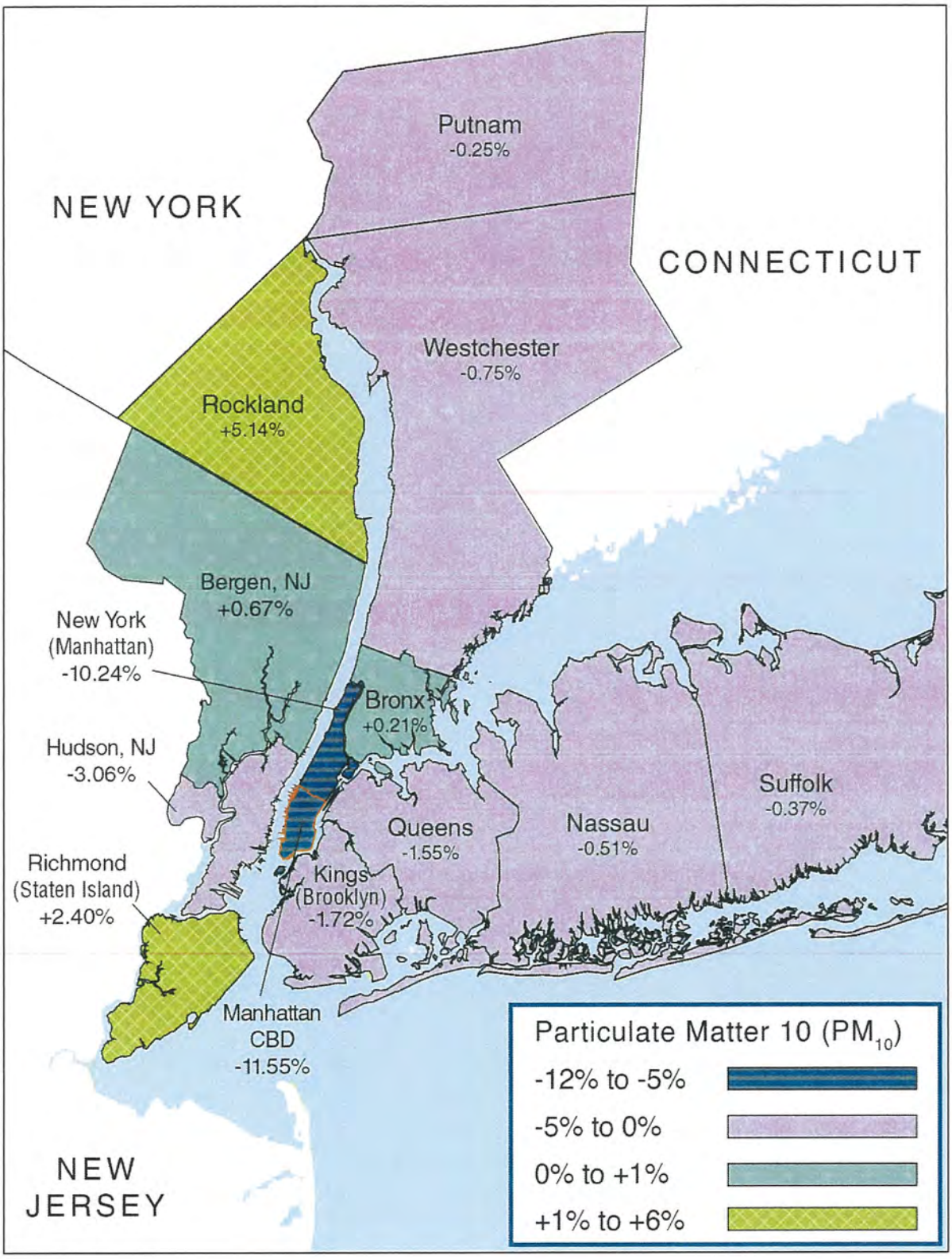


Figure 10-13. Changes in Particulate Matter 2.5 ($PM_{2.5}$), CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

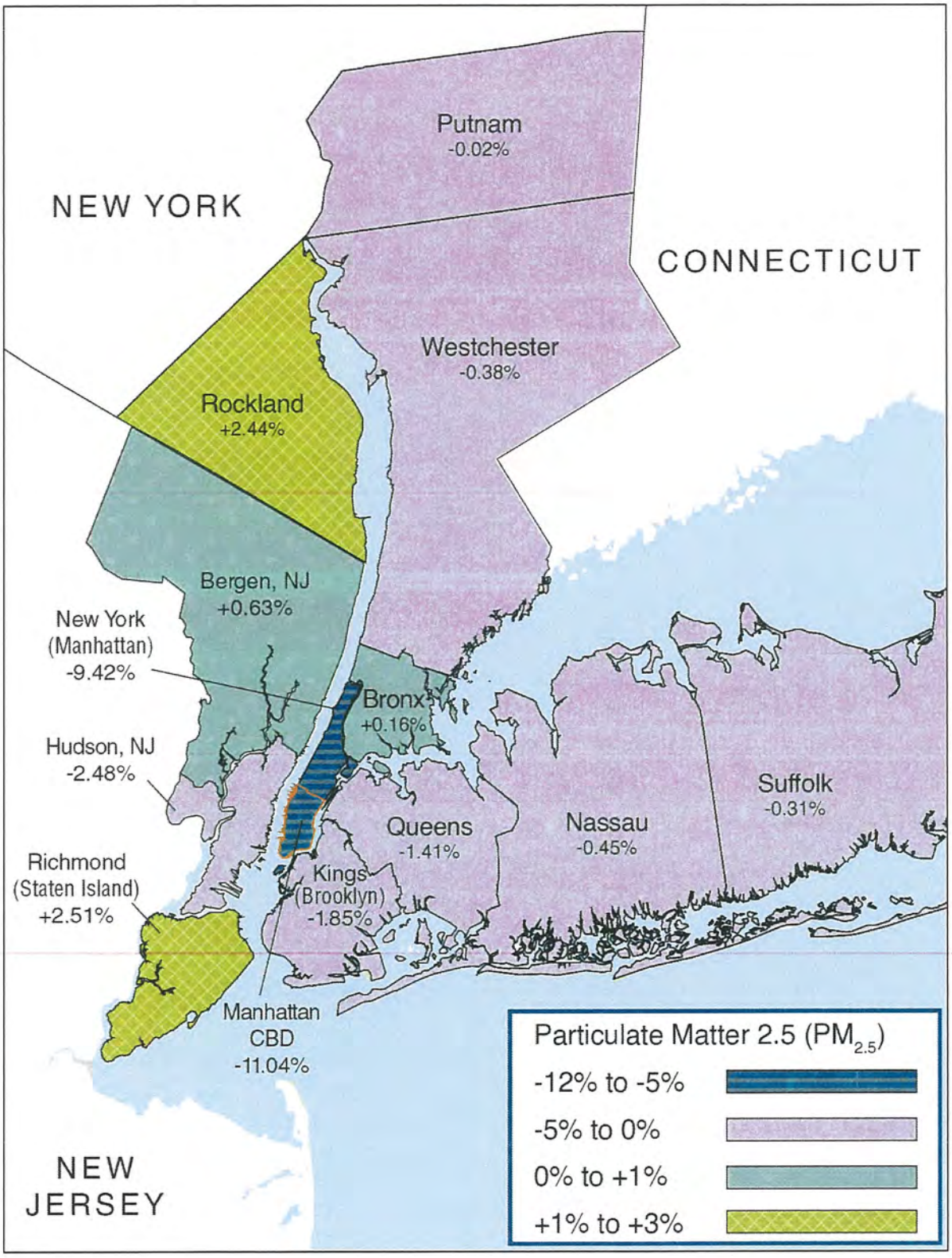


Table 10-10 presents the emission burdens of MSATs under the No Action Alternative and CBD Tolling Alternative. In all analysis years, when looking at the entire 12-county study area, all MSATs would be lower under the CBD Tolling Alternative compared to the No Action Alternative. **Table 10-11** and **Table 10-12** provide the estimated changes by county, which are graphically depicted in **Figure 10-14** and **Figure 10-15**.

As shown in **Table 10-11**:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Westchester, Rockland, and Hudson Counties estimate decreases in all MSATs with the Project in 2023.
- The Bronx, Richmond (Staten Island), Nassau, Suffolk, Putnam, and Bergen Counties estimate increases in all MSATs with the Project in 2023.

As shown in **Table 10-12**:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Suffolk, Putnam, and Hudson Counties estimate decreases in all MSATs with the Project in 2045.
- The Bronx, Nassau, Westchester, and Rockland Counties estimate mixed results with some MSATs increasing slightly and some pollutants decreasing with the Project in 2045.
- Richmond (Staten Island) and Bergen Counties estimate increases in all MSATs with the Project in 2045.

When comparing the CBD Tolling Alternative to the No Action Alternative, some localized areas may experience increases in MSATs, while other areas may experience decreases. It should be noted, however, that MSAT emissions will likely be lower in the future years than present levels, regardless of whether the CBD Tolling Alternative is implemented, as a result of USEPA's national control programs that are projected to reduce annual MSAT emissions by more than 90 percent between 2010 and 2050 (**Figure 10-1**).

Changes in MSATs are expected to occur near the roadways that experience changes in VMT. **Figure 10-16** highlights the roadways with the VMT increases due to the Project. Furthermore, these VMT changes were tabulated for environmental justice and non-environmental justice communities and are presented in **Table 4A-23 and Table 4A-24 (Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling")** for the various subareas of the region.

Table 10-10. Mobile Source Air Toxics Emission Burdens, CBD Tolling Alternative (Tolling Scenario A, tons/year)

POLLUTANT	ANALYSIS YEAR 2023			ANALYSIS YEAR 2045		
	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	Difference	No Action Alternative	CBD Tolling Alternative (Tolling Scenario A)	Difference
Daily Vehicle-Miles Traveled (miles/day)	182,736,632	182,143,856	-0.3%	201,294,782	200,421,921	-0.4%
1,3-Butadiene	4.53	4.50	-0.7%	0.23	0.23	-1.5%
Acetaldehyde	50.23	49.76	-0.9%	26.49	26.11	-1.4%
Acrolein	6.47	6.41	-0.9%	3.38	3.33	-1.4%
Benzene	82.56	82.07	-0.6%	39.40	39.07	-0.8%
Diesel Particulate Matter	373.41	370.61	-0.7%	132.79	131.57	-0.9%
Ethylbenzene	90.55	90.16	-0.4%	67.59	67.21	-0.6%
Formaldehyde	115.22	114.10	-1.0%	75.49	74.39	-1.5%
Naphthalene	11.24	11.14	-0.9%	6.00	5.92	-1.4%
Polycyclic Organic Matter	4.32	4.29	-0.7%	1.29	1.27	-1.0%

Source: WSP, 2022.

Note: Vehicle-miles traveled presented in this table are greater than the NYMTC Best Practice Model output as presented in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** due to a series of seasonal adjustments that were made to the travel-demand forecasts, consistent with NYMTC's procedures to generate maximum potential worst-case conditions for conformity analyses and are not applicable to evaluate general changes in travel patterns as is the purpose of **Subchapter 4A**. The NYMTC Post Processor software was used to apply Highway Performance Monitoring System reconciliation and travel-time adjustments for intersections. NYMTC's Transportation Conformity Determination includes details on these adjustments: https://www.nymtc.org/Required-Planning-Products/Transportation-Conformity/Transportation-Conformity-Determination-Documents-adopted.

Table 10-11. Mobile Source Air Toxics Emission Burden Percentage Changes by County, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

POLLUTANT	ANALYSIS YEAR 2023 COMPARISON – PERCENTAGE DIFFERENCE FROM NO ACTION ALTERNATIVE												
	New York		Queens	Bronx	ings	Richmond	Nassau	Suffolk	Westchester	Rockland	Putnam	Hudson	Bergen
	CBD Only	Entire County											
Daily VMT (miles/day)	-11.56%	-5.88%	-0.36%	+0.15%	-0.74%	+1.73%	+0.03%	-0.03%	-0.22%	-0.17%	+0.28%	-2.24%	+0.88%
1,3-Butadiene	-11.82%	-9.11%	-1.12%	+0.17%	-0.99%	+1.96%	+0.22%	+0.07%	-0.25%	-0.26%	+0.30%	-3.93%	+0.81%
Acetaldehyde	-11.78%	-9.09%	-1.13%	+0.16%	-0.99%	+1.95%	+0.26%	+0.08%	-0.25%	-0.27%	+0.30%	-3.96%	+0.79%
Acrolein	-11.79%	-9.25%	-1.17%	+0.15%	-1.01%	+1.98%	+0.29%	+0.10%	-0.26%	-0.28%	+0.29%	-4.05%	+0.77%
Benzene	-10.91%	-7.37%	-0.74%	+0.05%	-0.82%	+1.56%	+0.13%	+0.01%	-0.19%	-0.17%	+0.27%	-2.48%	+0.70%
Diesel PM	-11.79%	-8.64%	-0.94%	+0.20%	-0.94%	+1.99%	+0.23%	+0.10%	-0.28%	0.00%	+0.28%	-3.44%	+0.74%
Ethylbenzene	-8.58%	-6.14%	-0.65%	+0.07%	-0.63%	+1.01%	+0.12%	+0.03%	-0.11%	-0.12%	+0.15%	-1.57%	+0.40%
Formaldehyde	-11.78%	-9.18%	-1.15%	+0.16%	-1.00%	+1.96%	+0.29%	+0.09%	-0.26%	-0.28%	+0.29%	-4.02%	+0.77%
Naphthalene	-11.76%	-9.06%	-1.13%	+0.14%	-0.99%	+1.95%	+0.27%	+0.08%	-0.25%	-0.27%	+0.29%	-3.96%	+0.78%
Polycyclic Organic Matter	-11.59%	-8.46%	-0.99%	+0.09%	-0.96%	+1.84%	+0.20%	+0.04%	-0.24%	-0.25%	+0.30%	-3.62%	+0.82%

Source: WSP, 2022.

Table 10-12. Mobile Source Air Toxics Emission Burden Percentage Changes by County, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

POLLUTANT	ANALYSIS YEAR 2045 COMPARISON – PERCENTAGE DIFFERENCE FROM NO ACTION ALTERNATIVE												
	New York		Queens	Bronx	ings	Richmond	Nassau	Suffolk	Westchester	Rockland	Putnam	Hudson	Bergen
	CBD Only	Entire County											
Daily VMT (miles/day)	-11.32%	-5.71%	-0.46%	-0.05%	-1.14%	+1.83%	-0.26%	-0.04%	-0.38%	-0.43%	-0.41%	-1.59%	+0.69%
1,3-Butadiene	-11.13%	-10.02%	-1.56%	+0.16%	-1.77%	+2.23%	-0.45%	-0.44%	-0.73%	-0.31%	-9.14%	-3.32%	+0.68%
Acetaldehyde	-11.13%	-9.60%	-1.42%	+0.12%	-1.70%	+2.16%	-0.13%	-0.39%	-0.67%	-0.35%	-7.17%	-3.16%	+0.69%
Acrolein	-11.13%	-9.75%	-1.47%	+0.13%	-1.72%	+2.18%	-0.23%	-0.41%	-0.69%	-0.33%	-7.90%	-3.22%	+0.69%
Benzene	-10.11%	-7.81%	-0.84%	-0.03%	-1.41%	+1.71%	+0.84%	-0.23%	-0.42%	-0.35%	-2.24%	-2.00%	+0.54%
Diesel PM	-9.75%	-8.32%	-1.07%	+0.07%	-3.88%	+5.32%	-0.39%	-0.25%	+1.76%	+1.87%	-2.88%	-2.33%	+0.60%
Ethylbenzene	-6.90%	-5.82%	-0.73%	+0.05%	-0.96%	+0.93%	+0.03%	-0.19%	-0.23%	-0.13%	-1.76%	-1.19%	+0.28%
Formaldehyde	-11.13%	-9.73%	-1.46%	+0.13%	-1.72%	+2.18%	-0.21%	-0.41%	-0.69%	-0.34%	-7.76%	-3.21%	+0.69%
Naphthalene	-11.13%	-9.62%	-1.42%	+0.11%	-1.70%	+2.16%	-0.10%	-0.40%	-0.67%	-0.35%	-7.28%	-3.17%	+0.69%
Polycyclic Organic Matter	-11.04%	-8.44%	-1.04%	0.00%	-1.56%	+1.95%	+0.17%	-0.26%	-0.53%	-0.42%	-3.96%	-2.41%	+0.75%

Source: WSP, 2022.

Figure 10-14. Changes in Total Mobile Source Air Toxics: CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2023)

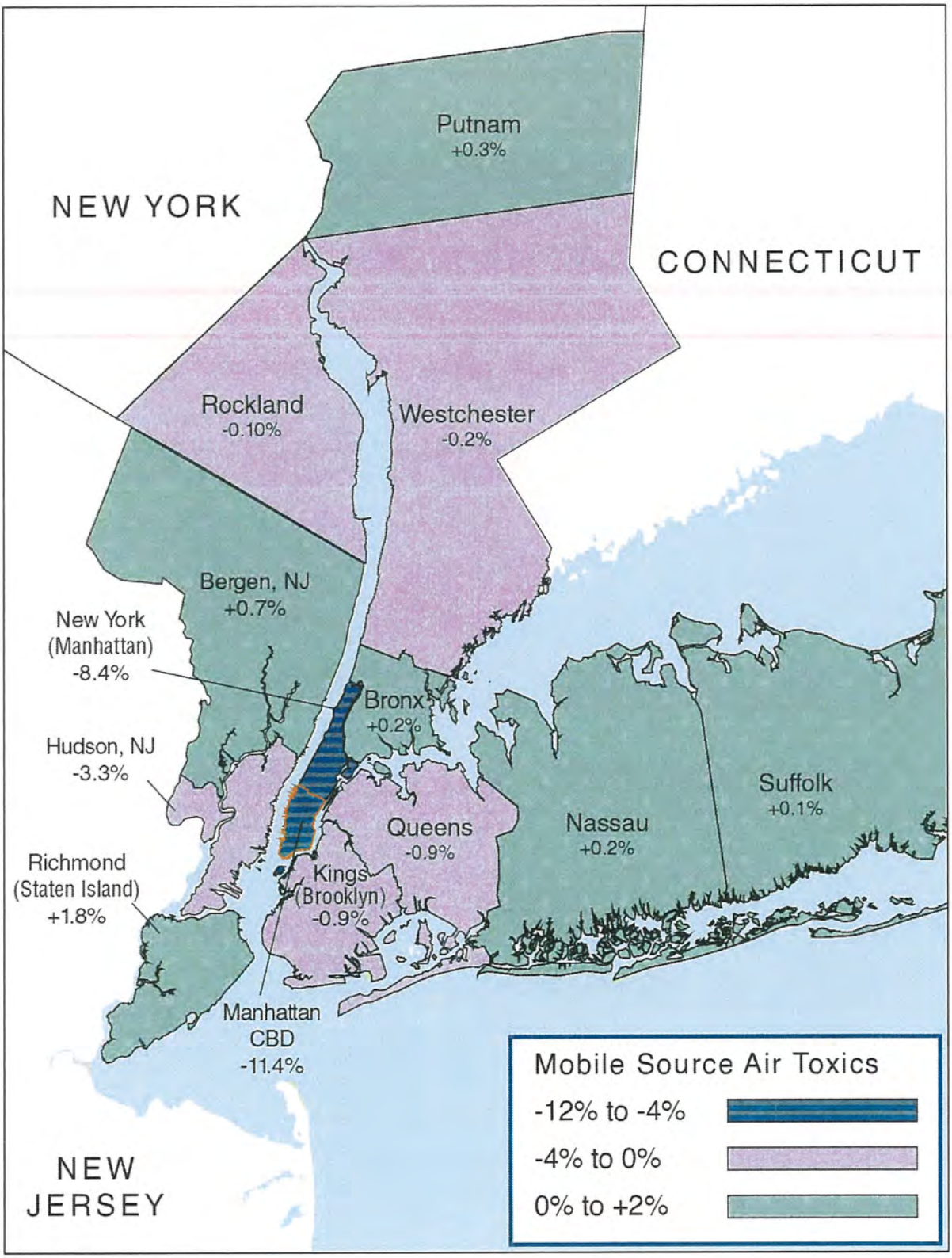


Figure 10-15. Changes in Total Mobile Source Air Toxics, CBD Tolling Alternative (Tolling Scenario A, Analysis Year 2045)

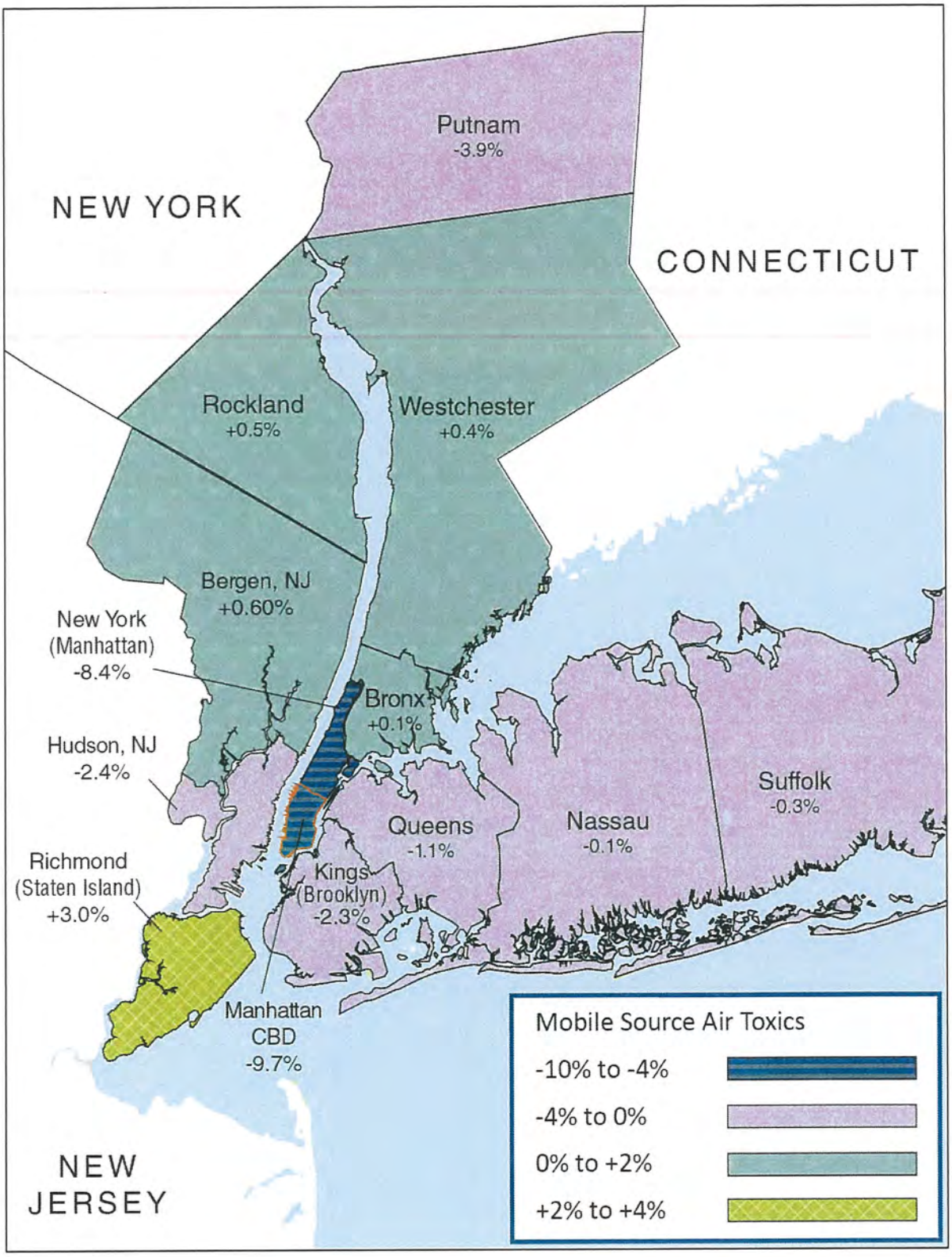
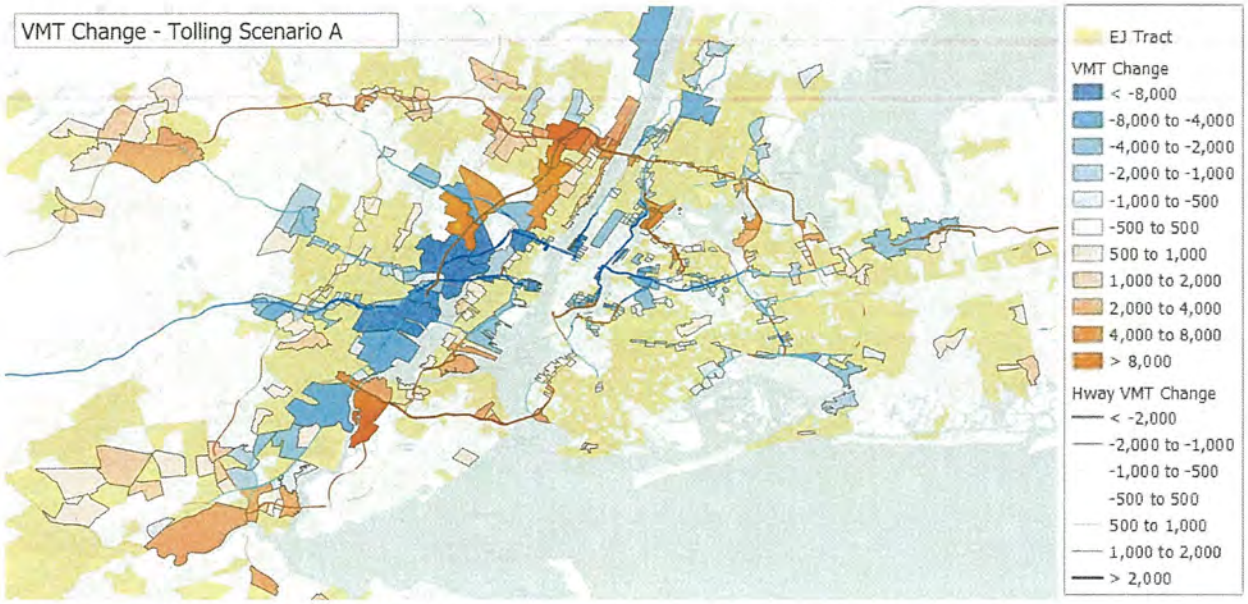


Figure 10-16. Vehicle-Miles Traveled Increase (Tolling Scenario A) and Environmental Justice Census Tracts



[Note: For an audio description, please go to the following link: https://www.youtube.com/watch?v=KvLDiR9t2S4&list=PLZHkn788ZOJPEY5zv-dr2gzkzMQFMgb_2&index=15.]

As shown in **Figure 10-16,** the Project would result in traffic diversions around Manhattan, into the Bronx and northern New Jersey and Staten Island. These circumferential diversions are due to implementation of the tolling in the Manhattan CBD, as drivers and trucks traveling to and from Long Island and Pennsylvania would divert around Manhattan to avoid the tolling in the Manhattan CBD. These diversions would be most pronounced at the approach to the Robert F. Kennedy Bridge in Queens, across the south Bronx and the George Washington Bridge, and into northern New Jersey. Diversions to the south would occur across the Verrazzano-Narrows Bridge and through Staten Island.

The environmental justice communities experiencing the largest traffic volumes and truck increases from these circumferential diversions are along I-95 in northern New Jersey and in Queens at the approach to the Robert F. Kennedy Bridge. Furthermore, during public engagement for the Project, members of the public expressed concerns regarding increased traffic volumes in environmental justice communities in the south Bronx, which would also be impacted by these circumferential diversions. To address these concerns, the Project team conducted detailed microscale PM analyses at these locations. **Section 10.3.2.3** provides more information on these analyses.

There are also environmental justice communities that would experience decreases in traffic volumes due to these circumferential diversions. These decreases would be mainly due to the traffic no longer traveling from Long Island through the Midtown Tunnel, across the Manhattan CBD, and through the Lincoln Tunnel into New Jersey. As such, the decreases in traffic volumes would be most pronounced along the Long Island Expressway in Queens, through the Midtown and Lincoln Tunnels, and into New Jersey. Those environmental justice communities that would experience the largest traffic volumes and truck decreases from the circumferential diversions are in central Queens, Hell's Kitchen in Manhattan, and in those portions of New Jersey to the south of the Lincoln Tunnel.

[Following publication of the EA in August 2022, and based on public comments and input from the Environmental Justice Technical Advisory Group, the Project Sponsors conducted additional analysis of traffic, especially truck traffic, diversions in environmental justice communities. This analysis is separate from the mesoscale, MSAT, GHG, and microscale screening analyses presented here, and is described in Chapter 17, "Environmental Justice," and Appendix 17D, "Technical Memorandum."]

10.3.2.2 Microscale Screening Analysis

A screening analysis was conducted to determine whether detailed microscale analyses of CO and $PM_{2.5}$/PM_{10} impacts are required for the CBD Tolling Alternative, or if the traffic would be below the screening thresholds and thus require no further analysis. Based on the predicted traffic volumes for Tolling Scenario D and Tolling Scenario C, as applicable, all 102 intersections in the regional study area were screened using NYSDOT CO screening parameters.*[19]* These 102 intersections, shown in **Subchapter 4B, "Transportation: Highways and Local Intersections," Figure 4B-13**, were analyzed because they are the

[19 For the Final EA, the Project Sponsors committed to additional mitigation measures (see Chapter 16, "Summary of Effects," Table 16-2). These new mitigation commitments neither require a change in the tolling scenarios used for the analyses in the EA nor change the fundamental conclusions of the EA (see Chapter 3, "Environmental Assessment Framework," Section 3.3.3).]

locations expected to demonstrate the largest changes in traffic due to the Project. Of these 102 intersections, approximately half are in environmental justice communities.

An intersection passed the CO screening analysis by either having a LOS of C or better with the Project, or, if the LOS was D or worse, demonstrating less than a 10 percent increase in volume between the No Action Alternative and the CBD Tolling Alternative. **Appendix 10B, "Air Quality: Project-Level Hot-Spot Screening Procedure,"** details the LOS and overall volumes for each peak hour in the AM, midday, PM, and overnight time periods, for the 102 intersections used for this screening.

The NYSDOT screening procedure was applied for $PM_{2.5}/PM_{10}$. As per NYSDOT guidance, this procedure was based on the maximum hourly changes in heavy-duty diesel vehicles under Project conditions, compared to conditions without the Project, for intersections that demonstrated a LOS of D or worse under the CBD Tolling Alternative. A maximum hourly change in heavy-duty diesel vehicles over 10 vehicles at those intersections predicted to operate at LOS D or below was determined to be the threshold for a significant increase, thereby warranting more detailed analysis. **Appendix 10B, "Air Quality: Project-Level Hot-Spot Screening Procedure,"** details the LOS and overall volumes and volume changes used for this screening for each of the 102 intersections analyzed.

As detailed in **Appendix 10B, "Air Quality: Project-Level Hot-Spot Screening Procedure,"** intersections predicted to experience an incremental increase of 10 or more diesel vehicles in the peak period are all predicted to operate at LOS C or better. Furthermore, the largest increase at those intersections predicted to operate at LOS D or worse and experience an increased volume of diesel vehicles is five additional diesel vehicles per hour. Intersections operating at LOS C or better do not warrant hot-spot analysis according to NYSDOT guidance and 40 CFR Part 93.123.

As shown in **Table 10-13,** all 102 analysis locations passed the NYSDOT CO and $PM_{2.5}/PM_{10}$ screening analysis; therefore, no further analysis for CO or $PM_{2.5}/PM_{10}$ is warranted. In addition, over 80 percent of the intersections show a decrease or no change in heavy-duty diesel vehicle volumes with the CBD Tolling Alternative compared to the No Action Alternative. For the 20 percent of intersections that show an increase, the change was less than the screening threshold of 10 or more diesel vehicles in the peak period. During early public outreach, concern was raised specifically around potential increases in heavy-duty vehicles in environmental justice communities given that heavy-duty diesel vehicles are closely linked to particulate matter emissions and associated health effects including cardiovascular and respiratory disease.[20] Of the 43 intersections that are located in environmental justice communities (see **Chapter 17, "Environmental Justice," Figure 17-*[6]***), 74 percent would experience a decrease of heavy-duty diesel vehicles. For those that are predicted to experience an increase, the change was less than the screening threshold of 10 or more diesel vehicles in the peak period.

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[20] See, for example, Hime, Neil J.; Guy B. Marks; and Christine T. Cowie, "A comparison of the health effects of ambient particulate matter air pollution from five emission sources," *International Journal of Environmental Research and Public Health* 15(6), 2018, https://www.mdpi.com/1660-4601/15/6/1206; and Aryal, Aryal; Ashlyn C. Harmon; and Tammy R. Dugas, "Particulate matter air pollutants and cardiovascular disease: Strategies for intervention," *Pharmacology & Therapeutics* 223, July 2021, https://www.sciencedirect.com/science/article/abs/pii/S0163725821000929.

Table 10-13. CO and $PM_{2.5}/PM_{10}$ Microscale Screening Results, CBD Tolling Alternative (Tolling Scenario C and Tolling Scenario D)

LOCATION	INTERSECTION	CO SCREENING	$PM_{2.5}/PM_{10}$ SCREENING
Downtown Brooklyn	Flatbush Avenue and Tillary Street	Passed	Passed
	Adam Street and Tillary Street	Passed	Passed
	Old Fulton Street and Vine Street	Passed	Passed
Lincoln Tunnel (Manhattan)	Ninth Avenue and West 33rd Street	Passed	Passed
	Dyer Avenue and West 34th Street	Passed	Passed
	Twelfth Avenue and West 34th Street	Passed	Passed
	Eleventh Avenue and West 42nd Street	Passed	Passed
	Dyer Avenue and West 36th Street	Passed	Passed
	Tenth Avenue and West 33rd Street	Passed	Passed
	Eleventh Avenue and West 34th Street	Passed	Passed
	Tenth Avenue and West 41st Street	Passed	Passed
	Twelfth Avenue and West 42nd Street	Passed	Passed
Long Island City (Queens)	Pulaski Bridge/11th Street and Jackson Avenue	Passed	Passed
	11th Street and 48th Avenue	Passed	Passed
	50th Avenue at Vernon Boulevard	Passed	Passed
	Green Street and McGuiness Boulevard	Passed	Passed
	McGuinness Boulevard and Freeman Street	Passed	Passed
	21st Street and 49th Avenue	Passed	Passed
	11th Street and Borden Avenue	Passed	Passed
	Van Dam Street and Queens-Midtown Tunnel Expressway	Passed	Passed
	Van Dam Street and Borden Avenue	Passed	Passed
	Jackson Ave/Northern Boulevard and Queens Plaza	Passed	Passed
	Thomson Avenue and Dutch Kills Street	Passed	Passed
	Thomson Avenue and Dutch Kills Street	Passed	Passed
	21st Street and Queens Plaza N	Passed	Passed
Lower Manhattan (Manhattan)	Trinity Place and Edgar Street	Passed	Passed
	Trinity Place and Rector Street	Passed	Passed
	Hugh L. Carey Tunnel Entrance/Exit and West Street	Passed	Passed
	Hugh L. Carey Tunnel Exit and West Street and West Thames Street	Passed	Passed
	Chambers Street and Centre Street	Passed	Passed
	Canal and Hudson Streets/Holland Tunnel On-Ramp	Passed	Passed
	Canal Street and Holland Tunnel On-Ramp	Passed	Passed
	Canal Street S and West Street	Passed	Passed
	West Street and Albany Street	Passed	Passed
	West Street and Vesey Street	Passed	Passed
	West Street and Chambers Street	Passed	Passed
	Canal Street/Manhattan Bridge and Bowery	Passed	Passed
	Manhattan Bridge and Bowery	Passed	Passed
	Sixth Avenue and Watts Street	Passed	Passed
	Canal Street and Sixth Avenue/Laight Street	Passed	Passed
New Jersey	14th Street/Holland Tunnel (E-W) and Marin Boulevard (N-S)	Passed	Passed
	14th Street (E-W) and Jersey Avenue (N-S)	Passed	Passed
	12th Street (E-W) and Jersey Avenue (N-S)	Passed	Passed
	12th Street/Holland Tunnel (E-W) and Marin Boulevard (N-S)	Passed	Passed

LOCATION	INTERSECTION	CO SCREENING	$PM_{2.5}/PM_{10}$ SCREENING
Queens-Midtown Tunnel (Manhattan)	East 37th Street and Third Avenue	Passed	Passed
	East 36th Street and Second Avenue	Passed	Passed
	East 34th Street and Third Avenue	Passed	Passed
	East 35th Street and Third Avenue	Passed	Passed
	East 34th Street and Second Avenue	Passed	Passed
	East 35th Street and Second Avenue	Passed	Passed
Red Hook (Brooklyn)	Hamilton Avenue, Clinton Street and West 9th Street	Passed	Passed
	Hamilton Avenue (northbound) and West 9th Street	Passed	Passed
Robert F. Kennedy Bridge (Manhattan, the Bronx, Queens)	East 126th Street and Second Avenue	Passed	Passed
	East 125th Street and Second Avenue	Passed	Passed
	East 134th Street and St. Ann's Avenue	Passed	Passed
	St. Ann's Avenue and Bruckner Boulevard	Passed	Passed
	31st Street and Astoria Boulevard	Passed	Passed
	Hoyt Avenue North and 31st Street	Passed	Passed
	Hoyt Avenue South and 31st Street	Passed	Passed
Upper East Side (Manhattan)	East 60th Street and Ed Koch Queensboro Bridge Exit	Passed	Passed
	East 60th Street and Third Avenue	Passed	Passed
	East 60th Street and York Avenue	Passed	Passed
	East 59th Street and Second Avenue	Passed	Passed
	East 60th Street and Second Avenue	Passed	Passed
	East 60th Street and First Avenue	Passed	Passed
	East 60th Street and Lexington Avenue	Passed	Passed
	East 60th Street and Park Avenue (northbound)	Passed	Passed
	East 60th Street and Park Avenue (south- and westbound)	Passed	Passed
	East 60th Street and Madison Avenue	Passed	Passed
	East 62nd Street and Ed Koch Queensboro Bridge Exit	Passed	Passed
	East 60th Street and Fifth Avenue	Passed	Passed
	East 63rd Street and York Avenue	Passed	Passed
	East 53rd Street and Franklin D. Roosevelt Drive	Passed	Passed
	East 61st Street and Fifth Avenue	Passed	Passed
	East 65th Street and Fifth Avenue	Passed	Passed
	East 66th Street and Fifth Avenue	Passed	Passed
	East 79th Street and Fifth Avenue	Passed	Passed
	East 71st Street and York Avenue	Passed	Passed

LOCATION	INTERSECTION	CO SCREENING	$PM_{2.5}/PM_{10}$ SCREENING
Upper West Side (Manhattan)	West 72nd Street and West End Avenue	Passed	Passed
	West 61st Street and West End Avenue	Passed	Passed
	West 79th Street and Riverside Drive	Passed	Passed
	West 56th Street and Twelfth Avenue	Passed	Passed
	West 56th Street and West Side Highway	Passed	Passed
	West 55th Street and West Side Highway	Passed	Passed
	West 55th Street and Twelfth Avenue	Passed	Passed
	West 55th Street and West Side Highway Arterial	Passed	Passed
	West 60th Street and Broadway	Passed	Passed
	West 60th Street and Columbus Avenue	Passed	Passed
	West 60th Street and Amsterdam Avenue	Passed	Passed
	West 60th Street and West End Avenue	Passed	Passed
	West 61st Street and Amsterdam Avenue	Passed	Passed
	West 61st Street and Columbus Avenue	Passed	Passed
	West 61st Street and Broadway	Passed	Passed
	West 61st Street and Columbus Avenue	Passed	Passed
	West 81st Street and Central Park West	Passed	Passed
	West 66th Street and Central Park West	Passed	Passed
	West 65th Street and Central Park West	Passed	Passed
West Side Highway/ Route 9A (Manhattan)	West 24th Street and Twelfth Avenue	Passed	Passed
Little Dominican Republic (Manhattan)	West 179th Street and Broadway	Passed	Passed
Lower East Side (Manhattan)	Park Row/Chatham Square, Worth/Oliver Street and Mott Street	Passed	Passed
	Chatham Square and East Broadway	Passed	Passed
	Chatham Square/Bowery and Division Street	Passed	Passed

Appendix 10B, "Air Quality: Project-Level Hot-Spot Screening Procedure," provides details of the CO and $PM_{2.5}/PM_{10}$ screening analysis.

10.3.2.3 Highway Link Analysis

During early outreach, concerns were raised related to a specific location at FDR Drive and 10th Street, as it is near low-income housing locations. A volume threshold screening was conducted and results were compared to the thresholds in Table 3B of Section I-3 of the NYSDOT TEM Chapter 1.1. The emission factors applied within this screening are from USEPA's MOVES model. CO emission factors were generated for various speeds along FDR Drive (from 10 to 40 miles per hour) for opening-year conditions and ranged from 1.9 to 2.9 grams per mile. Upon comparison to Table 3B in the TEM, when applying the above emission factors, the peak-hour volumes in the Project would not result in an adverse effect if they have approach volumes of less than 8,000 vehicles. According to the traffic analysis, approach volumes on FDR Drive at 10th Street are under the 8,000-vehicle threshold with the Project. As such, the travel lanes in this area do not meet the criteria that would warrant a microscale analysis, and the Project would not increase traffic volumes or change other existing conditions to such a degree as to jeopardize attainment of the NAAQS for CO.

Similar to concerns expressed regarding truck volumes on local intersections, concerns were also raised during early public outreach regarding changes in truck volumes on nearby highways, the resulting impact on particulate matter at a localized level. Specifically, there was concern that in communities that already are overburdened by pollution, even a single additional truck is of concern. Though all sites analyzed passed the particulate matter screening parameters established for the Project, in recognition of the association of particulate matter and health effects, it was decided to conduct hot-spot analyses on highway links throughout the study area to quantify the Project's impact on localized air quality levels. A highway link screening analysis was conducted to determine which locations should be analyzed. Since the tolling scenarios affect individual highway links differently, this screening analysis evaluated every highway link under every scenario and selected those sites that demonstrated the highest AADT and the highest increase in heavy-duty diesel trucks (see **Table 10B-27** and **Table 10B-28**). Furthermore, due to specific community concerns in the South Bronx, an additional analysis location was selected on the Cross Bronx Expressway at Macombs Road. This location was also screened under every scenario.*[21]*

The sites chosen for analysis are the following:

- I-95 west of the George Washington Bridge, Tolling Scenario C
  - Highest AADT in all scenarios
  - New Jersey location
  - Environmental justice community
- Cross Bronx Expressway at Macombs Road, Tolling Scenario B
  - Community concern
  - Scenario with highest truck increase at that location
  - Bronx location
  - Environmental justice community
- Robert F. Kennedy (Triborough) Queens Approach, Tolling Scenario E
  - Highest truck increase across all scenarios
  - Queens location
  - Environmental justice community

[As discussed in Appendix 10C and confirmed through Interagency Consultation, approximately 1,000-foot-long highway-segment locations were modeled at each of the *three above locations. The analysis was conducted for opening year conditions (2023) with and without the Project, to evaluate the immediate effects of the Project related to truck diversions in the year of highest emissions for $PM_{2.5}$ emissions, as shown by the regional emissions burden analysis. The analysis was performed using the EPA's MOVES3 emissions model, AP-42, and the AERMOD dispersion model, along with link-specific traffic information and local meteorological data. As shown in the AERMOD model screenshots in Appendix 10C, all roadways within the 1,000-foot-long segment were modeled (shown as green lines), and receptors were*

[21 For the Final EA, the Project Sponsors committed to additional mitigation measures (see Chapter 16, "Summary of Effects," Table 16-2). These new mitigation commitments neither require a change in the tolling scenarios used for the analyses in the EA nor change the fundamental conclusions of the EA (see Chapter 3, "Environmental Assessment Framework," Section 3.3.3).]

placed in a grid (shown as yellow cross-marks) to estimate the highest concentrations of PM_{10} and $PM_{2.5}$. The results of the modeling were then added to the applicable background concentrations in order to compare to the NAAQS for 24-hour PM_{10}, 24-hour $PM_{2.5}$, and annual $PM_{2.5}$.

The results of the PM microscale analyses *are presented in Table 10-14. As shown*, all levels *are]* below the applicable NAAQS. Details of the analysis results, as well as electronic versions of the MOVES and AERMOD files, are contained within **Appendix 10C, "Air Quality: Highway Link PM Hot-Spot Detailed Assessment (Methodology, Interagency Consultation, & Results)."**

[Table 10-14. Predicted Concentrations of Particulate Matter with the CBD Tolling Alternative (µg/m³)]

SITE	CONDITION	24-HOUR PM_{10}	24-HOUR $PM_{2.5}$	ANNUAL $PM_{2.5}$
I-95 west of the George Washington Bridge	No Action	105	29.5	11.1
	Tolling Scenario C	107	29.7	11.2
Cross Bronx Expressway at Macombs Road	No Action	108	27.5	10.9
	Tolling Scenario B	109	27.7	11.0
Robert F. Kennedy (Triborough) Queens Approach	No Action	107	25.2	9.8
	Tolling Scenario E	122	27.7	10.6
	NAAQS	150	35.0	12.0

Source: WSP, 2022.
Note: Values include background concentrations.

As an independent action, MTA is currently transitioning its fleet to zero-emission buses. MTA is committed to prioritizing traditionally underserved communities and those impacted by poor air quality and climate change and has developed an approach that actively incorporates these priorities in the deployment phasing process of the transition. Based on feedback received during the outreach conducted for the Project and concerns raised by members of environmental justice communities, MTA will prioritize the Kingsbridge Depot and Gun Hill Depot, both located in and serving primarily environmental justice communities in Upper Manhattan and the Bronx, when electric buses are received in MTA's next major procurement of battery electric buses, which ***[began]*** in ***[late]*** 2022. This independent effort by MTA is anticipated to provide air quality benefits to the environmental justice communities in the Bronx.

Furthermore, the Project Sponsors will monitor air quality for the life of the Project through the NYCCAS, a citywide network of roughly 100 sensors (see **Section 10.2**). NYCDOT will coordinate to expand the existing network of sensors to monitor priority locations and supplement a smaller number of real-time $PM_{2.5}$ monitors to provide insight into time-of-day patterns to determine whether the changes in air pollution can be attributed to changes in traffic occurring after implementation of the Project. *[The Project Sponsors will select the additional monitoring locations in consideration of air quality analysis in the EA and input from environmental justice stakeholders. NYSDEC and other agencies conducting monitoring will also be consulted prior to finalizing the monitoring approach.]* The Project Sponsors will monitor air quality prior to implementation (setting a baseline), and two years following implementation. Following the initial two-year post-implementation analysis period, ***[and separate from ongoing air quality monitoring and reporting,]*** the Project Sponsors will assess the magnitude and variability of changes in air quality to determine whether more monitoring ***[sites are]*** necessary. *[Data collected throughout the monitoring program will be made*

available publicly as data becomes available and analysis is completed. Data from the real-time monitors will be available online continuously from the start of pre-implementation monitoring.]

10.4 TRANSPORTATION CONFORMITY DETERMINATION

The Project was included in the regional emissions analysis for NYMTC's most recent Transportation Conformity Determination. FHWA and FTA determined that NYMTC's 2022-2050 Plan and 2020-2024 Transportation Improvement Program (TIP) conform to the New York State Implementation Plan (SIP) for Air Quality on September 30, 2021.

Using screening criteria established by NYSDOT's TEM, traffic volume changes resulting from the CBD Tolling Alternative would not be substantial enough to warrant detailed analysis of CO and PM at the 102 intersections analyzed. Furthermore, the analyzed highway links passed NYSDOT's screening criteria for CO and did not exceed the NAAQS for particulate matter. As such, the Project satisfied the hot-spot analysis requirements for CO and PM in 40 CFR 93.116 and 123.

10.5 CONCLUSION

The Project was included in the regional emissions analysis for NYMTC's most recent Transportation Conformity Determination. FHWA and FTA determined that NYMTC's 2022-2050 Plan and 2020-2024 TIP conform to the New York SIP.

Air quality analyses were completed on both a regional (mesoscale) and a local (microscale) level. The mesoscale, MSAT and GHG analyses focused on 12 counties in New York and New Jersey.[22] Those New Jersey counties included in the analysis demonstrate both the biggest increase and decrease in VMT (Bergen and Hudson Counties, respectively). VMT in Connecticut is predicted to decrease between the No Action Alternative and the CBD Tolling Alternative; as such, Connecticut counties were not included in the mesoscale analysis.

[On a regional level, when evaluating the 12-county study area as a whole, the CBD Tolling Alternative would benefit air quality by reducing criteria pollutants, MSATs, and GHGs.]

At the county level, for criteria pollutants in 2023:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Rockland, and Hudson Counties estimate decreases in all pollutants with the Project.
- Suffolk, Westchester, and Putnam Counties estimate mixed results, with some pollutants increasing slightly and some pollutant burdens decreasing with the Project.

[22] New York City: the Bronx, Kings (Brooklyn), New York (Manhattan), Queens, and Richmond (Staten Island) Counties; Long Island: Nassau and Suffolk Counties; North of New York City: Putnam, Rockland, and Westchester Counties; New Jersey: Hudson and Bergen Counties.

- The Bronx, Richmond (Staten Island), Nassau, and Bergen Counties estimate increases in all pollutants with the Project.

At the county level, for criteria pollutants in 2045:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Suffolk, and Hudson Counties estimate decreases in all pollutants with the Project.
- The Bronx, Nassau, Westchester, Rockland, and Putnam Counties estimate mixed results with some pollutants increasing slightly and some pollutants decreasing with the Project.
- Richmond (Staten Island) and Bergen Counties estimate increases in all pollutants with the Project.

At the county level, for MSATs in 2023:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Westchester, Rockland, and Hudson Counties estimate decreases in all MSATs with the Project.
- The Bronx, Richmond (Staten Island), Nassau, Suffolk, Putnam, and Bergen Counties estimate increases in all MSATs with the Project.

At the county level, for MSATs in 2045:

- The Manhattan CBD along with New York (Manhattan), Queens, Kings (Brooklyn), Suffolk, Putnam, and Hudson Counties estimate decreases in all MSATs with the Project.
- The Bronx, Nassau, Westchester, and Rockland, Counties estimate mixed results with some MSATs increasing slightly and some pollutants decreasing with the Project.
- Richmond (Staten Island) and Bergen Counties estimate increases in all MSATs with the Project.

The microscale analysis focused on 102 intersections in the following areas:

- Long Island City
- Lower Manhattan
- Queens-Midtown Tunnel
- Red Hook Brooklyn
- Upper East Side
- Lincoln Tunnel
- West Side Highway/Route 9A
- Downtown Brooklyn
- Robert F. Kennedy Bridge
- Upper West Side
- Washington Heights
- Lower East Side
- New Jersey

Through interagency consultation and follow-up discussions, screening analyses were conducted following NYSDOT criteria for both CO and particulate matter ($PM_{2.5}$/PM_{10}). All 102 intersections passed the NYSDOT CO and $PM_{2.5}$/PM_{10} screening analysis. For intersections that are located within the CO maintenance areas, CO hot-spot analysis requirements in 40 CFR 93.123(a) are met. Based on the screening analyses, it was determined that the Project is not a project of air quality concern as defined in 40 CFR 93.123(b)(1); therefore, no hot-spot analysis for $PM_{2.5}$/PM_{10} is required. The Project meets the project-level conformity requirements and would not create any new or worsen any existing violation of the NAAQS or delay timely attainment of any NAAQS or any required interim emission reductions or other milestones.

In response to public comments received, a highway segment CO screening was conducted on FDR Drive near 10th Street using NYSDOT's volume threshold screening. The analyzed location passed the screening, and no further CO analysis is warranted.

Furthermore, through interagency consultation and to address community concerns, particulate matter hot-spot analyses were conducted on highway segments at three locations representing worst-case conditions (largest increases in truck traffic and highest AADT under the Project) and community concerns. According to the analyses, there were no violations of the NAAQS with the Project, and no further analysis is warranted.

[Table 10-15] summarizes the air quality-related effects of the CBD Tolling Alternative*[, and Table 10-16 summarizes how enhancement measures will be implemented by the Project Sponsors. Chapter 17, "Environmental Justice," describes additional mitigation measures that will be implemented to address potential adverse effects on environmental justice communities related to changes in air quality as a result of increased traffic due to the Project.]*

Table 10-15. Summary of Effects of the CBD Tolling Alternative on Air Quality

SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
			A	B	C	D	E	F	G		
Increases or decreases in emissions related to truck traffic diversions	Cross Bronx Expressway at Macombs Road, Bronx, NY	Increase or decrease in Annual Average Daily [Traffic] (AADT)	3,901	3,996	2,056	1,766	3,757	2,188	3,255	No	No mitigation needed. No adverse effects Enhancements 1. Refer to the overall Project enhancement on monitoring at the end of this table. 2. [TBTA will work with C O M to expand the existing network of sensors to monitor priority locations, and supplement a smaller number of real-time PM monitors to provide insight into time-of-day patterns to determine whether the changes in air pollution can be attributed to changes in traffic occurring after implementation of the Project. [The ro ect ponsors will select the additional monitoring locations in consideration of air uality analysis in the EA and input from environmental ustice sta eholders EC and other agencies conducting monitoring will also be consulted prior to finali ing the monitoring approach] The Project Sponsors will monitor air quality prior to implementation (setting a baseline), and two years following implementation. Following the initial two-year post-implementation analysis period, [and separate from ongoing air uality monitoring and reporting] the Project Sponsors will assess the magnitude and variability of changes in air quality to determine whether more monitoring [sites are] necessary. [ata collected throughout the monitoring program will be made available publicly as data becomes available and analysis is completed ata from the real time monitors will be available online continuously from the start of pre implementation monitoring] 3. MTA is currently transitioning its fleet to zero-emission buses, which will reduce air pollutants and improve air quality near bus depots and along bus routes. MTA is committed to prioritizing traditionally underserved communities and those impacted by poor air quality and climate change and has developed an approach that actively incorporates these priorities in the deployment phasing process of the transition. Based on feedback received during the outreach conducted for the Project and concerns raised by members of environmental justice communities, TBTA coordinated with MTA NYCT, which is committed to prioritizing the Kingsbridge Depot and Gun Hill Depot, both located in and serving primarily environmental justice communities in Upper Manhattan and the Bronx, when electric buses are received in MTA's next major procurement of battery electric buses, which [began] in [late] 2022. This independent effort by MTA NYCT is anticipated to provide air quality benefits to the environmental justice communities in the Bronx
		Increase or decrease in daily number of trucks	509	704	170	510	378	536	50		
		Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		
	I-95, Bergen County, NJ	Increase or decrease in AADT	9,843	11,459	7,980	5,003	7,078	5,842	12,506	No	
		Increase or decrease in daily number of trucks	801	955	729	631	696	637	-236		
		Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		
	Robert F. Kennedy Bridge, NY	Increase or decrease in AADT	18,742	19,440	19,860	19,932	20,465	20,391	21,006	No	
		Increase or decrease in daily number of trucks	2,257	2,423	2,820	3,479	4,116	3,045	432		
		Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		

OVERALL PROJECT ENHANCEMENT. The Project Sponsors commit to ongoing monitoring and reporting of potential effects of the Project, including for example, traffic entering the Manhattan CBD, taxi/FHV vehicle-miles traveled in the Manhattan CBD; transit ridership from providers across the region; bus speeds within the CBD; air quality and emissions trends; parking; and Project revenue. Data will be collected in advance and after implementation of the Project. A formal report on the effects of the Project will be issued one year after implementation and then every two years. In addition, a reporting website will make data, analysis, and visualizations available in open data format to the greatest extent [practicable]. Updates will be provided on at least a bi-annual basis as data becomes available and analysis is completed. [This data will also be used to support an adaptive management approach to monitoring the efficacy of mitigation and ad ustments as warranted]

[Table 10-16. Summary of the CBD Tolling Alternative Implementation Approach for Enhancement Measures for Air Quality]

TOPIC	RELEVANT LOCATION(S)	DESCRIPTION OF ENHANCEMENT	TIMELINE FOR PRE- AND POST-PROJECT IMPLEMENTATION DATA COLLECTION FOR SPECIFIC MEASURES	THRESHOLD FOR DETERMINING WHEN NEXT STEP(S) WILL BE IMPLEMENTED	TIMING FOR SPECIFIC MEASURES	LEAD AGENCY
Air Quality	New York City	TBTA will coordinate with NYC DOHMH to expand the city's existing network of sensors to monitor priority locations, and supplement a smaller number of real-time $PM_{2.5}$ monitors to provide insight into time-of-day patterns to determine whether the changes in air pollution can be attributed to changes in traffic occurring after implementation of the Project. The Project Sponsors will select the additional monitoring locations in consideration of air quality analyses in the EA and input from environmental justice stakeholders. NYSDEC and other agencies conducting monitoring will also be consulted prior to finalizing the monitoring approach. The Project Sponsors will monitor air quality prior to implementation (setting a baseline), and two years following implementation. Following the initial two-year post-implementation analysis period, and separate from ongoing air quality monitoring and reporting, the Project Sponsors will assess the magnitude and variability of changes in air quality to determine whether more monitoring sites are necessary. Data collected throughout the monitoring program will be made available publicly as data becomes available and analyses is completed. Data from the real-time monitors will be available online continuously from the start of pre-implementation monitoring.	In the year prior to Project implementation (setting a baseline), and two years following Project implementation Locations and durations will be determined in consideration of land uses and non-Project sources of emissions and with input from environmental justice stakeholders	N/A – No threshold required; implemented under any adopted tolling structure.	Allocation of resources and approval of work plan is underway. Baseline data will be collected in the year prior to Project implementation, but the exact start and duration will be dependent on timing for Project implementation. The monitoring locations will be confirmed at least four months prior to data collection. No less than six months of data will be collected prior to Project implementation.	TBTA will lead in partnership with NYC [illegible]
Air Quality	Upper Manhattan and the Bronx	MTA is currently transitioning its fleet to zero-emission buses, which will reduce air pollutants and improve air quality near bus depots and along bus routes. MTA is committed to prioritizing traditionally underserved communities and those impacted by poor air quality and climate change and has developed an approach that actively incorporates these priorities in the deployment phasing process of the transition. Based on feedback received during the outreach conducted for the Project and concerns raised by members of environmental justice communities, TBTA coordinated with MTA NYCT, which is committed to prioritizing the Kingsbridge Depot and Gun Hill Depot, both located in and serving primarily environmental justice communities in Upper Manhattan and the Bronx, when electric buses are received in MTA's next major procurement of battery electric buses, which began in late 2022. This independent effort by MTA NYCT is anticipated to provide air quality benefits to the environmental justice communities in the Bronx.	Data on the number and location of MTA's battery electric buses is collected in an ongoing manner	N/A – No threshold required implemented under any adopted tolling structure.	Prioritization is complete. Timeline for receipt of buses is the first quarter of 2025	TBTA will lead in partnership [illegible]
Overall Project Enhancement	Manhattan CBD and other locations in the 28-county region	The Project Sponsors commit to ongoing monitoring and reporting of potential effects of the Project, including for example, traffic entering the CBD, vehicle-miles traveled in the CBD; transit ridership from providers across the region; bus speeds within the CBD; air quality and emissions trends; parking; and Project revenue. Data will be collected in advance and after implementation of the Project. A formal report on the effects of the Project will be issued one year after implementation and then every two years. In addition, a reporting website will make data, analysis, and visualizations available in open data format to the greatest extent practicable. Updates will be provided on at least a bi-annual basis as data becomes available and analysis is completed. This data will also be used to support an adaptive management approach to monitoring the efficacy of mitigation, and adjustments as warranted.	Baseline data gathering began in 2019 and will continue through Project implementation as data from external sources becomes available (with some data sets published only annually or quarterly) and data analysis is completed. After Project implementation, these data sets will continue to be collected as they become available and new data sets, such as Project revenue, will start being collected.	N/A – No threshold required implemented under any adopted tolling structure.	The reporting website will begin reporting baseline data and post-implementation data from the tolling system as soon as practicable after Project implementation. A formal report on the effects of the Project will be issued one year after implementation and then every two years. In addition, the reporting website will make data, analysis, and visualizations available in open data format to the greatest extent practicable. Updates will be provided on at least a bi-annual basis as data becomes available and analysis is completed. This data will also be used to support an adaptive management approach to monitoring the efficacy of mitigation, and adjustments as warranted.	TBTA will lead in partnership with NYCDOT, NYSDOT, with coordination with other agencies and entities for data as appropriate.

11. Energy

11.1 INTRODUCTION

This chapter assesses the potential effect of the CBD Tolling Alternative on transportation energy usage. Transportation energy use also affects air quality and greenhouse gases, both of which are evaluated in **Chapter 10, "Air Quality."**

Transportation energy use comprises operational (direct) and construction (indirect) energy consumption. Direct transportation energy is a function of traffic volumes and vehicle types that affect fuel consumption (i.e., volume, speed, distance traveled, vehicle mix, and the thermal value of the fuel being used for roadway vehicles), as well as the energy required for the tolling equipment. Indirect energy consumption consists of nonrecoverable, one-time energy expenditures associated with construction of physical infrastructure associated with a project. Energy is commonly measured in terms of British thermal units (Btu), which is defined as the amount of heat required to raise the temperature of a pound of water by 1 degree Fahrenheit. As discussed in **Subchapter 4C, "Transportation: Transit,"** the frequency of transit service is expected to accommodate any projected increase in transit ridership due to the Project; therefore, no incremental energy would be required for increased transit service.

11.2 AFFECTED ENVIRONMENT

Transportation accounts for a major portion of the energy consumed in New York State. According to the U.S. Energy Information Administration's State Energy Data System,[1] the transportation sector (including losses) was New York State's largest consumer of energy in 2019, accounting for 31.1 percent of all energy consumption in the state. Transportation energy includes the following:[2]

- Gasoline, diesel fuel, natural gas, propane, and biofuels used in cars, motorcycles, light trucks, and boats (879 trillion Btu in 2019)
- Aviation fuel (307 trillion Btu in 2019)
- Electricity used by public mass transit systems and electric vehicles (10 trillion Btu in 2019)

The residential sector consumed 29.7 percent of total energy consumption, the commercial sector 29.2 percent, and the industrial sector 10.0 percent.

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1 https://www.eia.gov/state/?sid=NY.
2 https://www.eia.gov/state/seds/data.php?incfile=/state/seds/sep_use/tra/use_tra_NY.html&sid=NY.

Across all sectors, petroleum was the largest of the energy sources used, which can be attributed to the transportation sector being the largest consumer of energy in New York State. Petroleum accounted for 36.2 percent of energy consumption in New York State in 2019. Natural gas followed at 34.7 percent, renewable energy at 12.9 percent, nuclear energy at 12.2 percent, out-of-state electricity imports at 3.7 percent, and coal at 0.4 percent.

11.3 ENVIRONMENTAL CONSEQUENCES

The U.S. Environmental Protection Agency's MOVES2014b emissions model was used to estimate the mobile source energy use from the mesoscale roadway network in a 12-county region, consistent with the study area used for the mesoscale air quality and greenhouse gas analyses (see **Chapter 10, "Air Quality"**). As discussed in **Chapter 10, "Air Quality"** (**Section 10.1.7.1** and shown in **Table 10-3**), this study area captures the most concentrated area of change resulting from the Project and the vast majority of the modeled VMT change. The 12 counties analyzed include those in New York that are projected to have the largest increase in VMT (Richmond County [Staten Island]) and the largest decrease in VMT (New York County [Manhattan]) as a result of the Project, as well as those counties in New Jersey that are predicted to have the largest increase in VMT (Bergen County) and the largest decrease in VMT (Hudson County) as a result of the Project. VMT in Connecticut is predicted to decrease in both 2023 and 2045 between the No Action Alternative and the CBD Tolling Alternative; as such, Connecticut counties were not included in the energy analysis.

As with the mesoscale air quality analysis, the energy analysis evaluated the No Action Alternative and the CBD Tolling Alternative, Tolling Scenario A, for the estimated time of completion (2023) and design year (2045). Tolling Scenario A was used for the energy analysis because it is the tolling scenario that would result in the smallest reduction of VMT compared to the No Action Alternative and therefore would provide the smallest potential regional energy benefit.

Based on the methodology used to identify the most concentrated areas of change, the following 10 New York counties and 2 New Jersey counties were used to analyze the CBD Tolling Alternative's energy impacts:

- New York City:
  - Bronx
  - Kings (Brooklyn)
  - New York (Manhattan)
  - Queens
  - Richmond (Staten Island)
- Long Island:
  - Nassau
  - Suffolk
- North of New York City:
  - Putnam
  - Rockland
  - Westchester
- New Jersey
  - Bergen
  - Hudson

MOVES2014b was used for the energy analysis. MOVES2014b provides great flexibility to capture the influence of time of day, vehicle activity (including VMT and speeds for autos, buses, and trucks), and seasonal weather effects on energy use from vehicles. MOVES2014b calculates energy usage parameters, such as total energy use and vehicle activity (hours operated and miles traveled). From this output, energy rates (e.g., Btu/vehicle miles for moving vehicles or Btu/vehicle hours for idling vehicles) can be determined for a variety of vehicle activities. County-specific MOVES2014b input data from the New York State Department of Environmental Conservation were used in combination with link-by-link traffic data and VMT data from the New York Metropolitan Transportation Council Best Practice Model for the CBD Tolling Alternative.

11.3.1 No Action Alternative

As **Table 11-1** shows, the No Action Alternative would not implement a vehicular tolling program and therefore would not reduce energy consumption through reductions in VMT.

11.3.2 CBD Tolling Alternative

Because Tolling Scenario A was used for the energy analysis, it is expected that the other tolling scenarios with larger VMT reductions would show greater regional energy benefits.

As **Table 11-1** shows, Tolling Scenario A would result in lower energy use in the region compared to the No Action Alternative for both completion year (2023) and design year (2045) because VMT would be reduced. In addition to the change in energy usage due to changes in roadway VMT, the Project would require energy to power monitoring and tolling equipment, including network detection systems and servers that process the data collected by the network detection systems. **Table 11-1** details the energy use for these systems.

Table 11-1. Total Energy Consumption: No Action Alternative and CBD Tolling Alternative, Tolling Scenario A (2023 and 2045)

PARAMETER (Million Btu)	ANALYSIS YEAR 2023 (Completion Year)			ANALYSIS YEAR 2045 (Design Year)		
	No Action Alternative	CBD Tolling Alternative	Difference	No Action Alternative	CBD Tolling Alternative	Difference
Roadway Energy	384,117,220	381,663,310	-2,453,910	329,538,610	326,649,830	-2,888,780
Server Energy	0	945	945	0	945	945
Systems	0	5,552	5,552	0	5,552	5,552
TOTAL OPERATIONAL ENERGY	384,117,220	381,669,807	-2,447,413	329,538,610	326,656,327	-2,882,283

Source: WSP

The CBD Tolling Alternative would result in an overall benefit for the region in terms of reduced energy usage.

11.3.3 Construction Effects

The CBD Tolling Alternative is anticipated to have a construction duration of up to 310 days. Construction would begin with the deployment of various monitoring devices throughout the street networks. The estimated construction cost of the Project is $108,687,261.00,[3] which includes the following:

- **Supporting System Tolling Infrastructure Installation ($94,919,283)** includes the cost of work, labor, tolling system equipment, and materials required for the tolling infrastructure construction (except for signage and pavement markings) that would be required to achieve tolling infrastructure readiness in accordance with the contract documents. Design services are excluded in this value.
- **Signage and Pavement Marking Installation ($13,767,978)** includes the cost of work, labor, equipment, and materials required for the signage and pavement markings within NYCDOT, NYSDOT, and Metropolitan Transportation Authority controlling jurisdictions that would be required to achieve infrastructure readiness in accordance with the contract documents. Design services are excluded in this value.

Based on this cost and using the NYSDOT construction cost calculation procedures to quantify energy use, the construction of the Project would require 268,000 million Btu of energy. This energy usage is expected to be paid back through the operational energy savings (detailed in **Table 11-1**) in less than one year.

11.4 CONCLUSION

An energy analysis was completed for the Project's operational and construction phases. The operational analysis shows that the Project would reduce energy use in the region in both 2023 and 2045. The construction of the Project would require 268,000 million Btu of energy, which is expected to be paid back through the operational energy savings in less than one year. **Table 11-2** summarizes the energy-related effects of the CBD Tolling Alternative.

Table 11-2. Summary of Effects of the CBD Tolling Alternative on Energy

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Reductions in regional energy consumption	Reductions in regional VMT would reduce energy consumption.	No	No mitigation needed. Beneficial effects

[3] Data provided by HDR on March 28, 2022, and April 6, 2022.

12 Noise

12.1 INTRODUCTION

This chapter evaluates the potential changes in traffic noise exposure that would result from the implementation of the CBD Tolling Alternative as a result of projected changes in traffic volumes. The Project would not change the horizontal or vertical alignment of roadways, nor would it add travel-lane capacity beyond current conditions; therefore, the Project does not meet the definition of a FHWA Type I noise project. However, it does meet the definition of a Type III noise project as defined under 23 Code of Federal Regulations 772.5, "Procedures for Abatement of Highway Traffic Noise and Construction Noise: Definitions." In this case, FHWA does not require a noise analysis or consideration of abatement measures. Nevertheless, due to the nature of the Project and its potential effects to result in changes in traffic patterns, the screening methodology outlined in Chapter 19 of the City of New York's *CEQR Technical Manual* was used to quantify and assess potential changes in noise exposure from the Project.

12.1.1 Context

Sound is energy generated by the vibration of air molecules, and almost any activity will generate varying degrees of sound energy. Noise is considered unwanted sound, and with Manhattan having the highest population density in the nation, noise generating activities occur in close proximity to where people live and work. The combination of various activities amplifies total noise exposure, resulting in a nearly constant elevated background noise level that city dwellers are exposed to. A 1974 U.S. Environmental Protection Agency research effort[1] showed a strong correlation between population density and ambient noise exposure. Typical frequent and dominant noise sources—ranging between 70 A-weighted decibels (dB(A)) and 90 dB(A)—include those generated by traffic and transit movements, aircraft flyovers, emergency vehicle sirens, construction activities, and building heat and air conditioning systems.

In general, the traffic noise exposure generated by the Project is not anticipated to raise future noise exposure levels appreciably above ambient noise levels experienced today and if implemented, the Project would result in a net decrease in traffic noise exposure along most local roadways evaluated.

12.1.2 Methodology

Noise can be quantified in different ways, depending on its duration (time), tonal (frequency), or magnitude (loudness). Sound is typically measured in units of decibels (dB). The human hearing range is more sensitive to midrange frequencies compared to either low or very high frequencies. This characteristic of the human ear is accounted for by adjusting or weighting the spectrum of the measured sound level for the sensitivity

[1] U.S. Environmental Protection Agency. June 1974. *Population Distribution of the United States as a Function of Outdoor Noise Level*, Report No. 550/9-74-009.

of the human hearing range, referred to as the A-weighted scale, and is denoted by the dB(A) notation. The definitions for the standardized environmental noise criteria metrics follow:

- L_{eq} is called the equivalent noise level, a single-value metric derived from the sum of actual time of varying and fluctuating sound over a fixed period of time (typically a one-hour period) that is denoted as L_{eq} (1-hr). The L_{eq} is the noise descriptor most commonly used in noise impact assessment criteria because it provides a measure of the average sound energy over a fixed period of time and correlates with human perception and annoyance.
- L_{max} and L_{min} are metrics for the highest and lowest measured sound levels, respectively, that occur during a measurement period. The L_{max} is commonly used in establishing construction noise exposure limits.
- L_n is a statistical representation of changing noise levels indicating that the fluctuating noise level is equal to, or greater than, the stated level for "n" percent of the time. For example, L_{10}, L_{50}, and L_{90} represent noise levels exceeding 10, 50, and 90 percent of the time, respectively. The L_{10} metric is widely used under the CEQR criteria to define and categorize the exterior noise environment and to establish noise attenuation requirements for maintaining an acceptable interior noise environment.

Table 12-1 provides a summary of an average human's ability to perceive changes in noise levels. Generally, the average human is unable to perceive noise-level changes until the changes measure in the 2-3 dB(A) range, but these increases are barely perceptible to most listeners, and it is not until the noise level change reaches 5 dB(A) or more that most humans can readily perceive changes in noise levels. **Table 12-2** provides a summary of noise levels generated and experienced in everyday life, ranging from 130 dB(A) (disruptive noise generated by a military jet) to 30 dB(A) (a soft whisper that would be unnoticeable to most listeners). Highway and urban traffic noise is typically in the 70 dB(A) to 80 dB(A) range. **Section 12.1.2** provides a discussion of noise exposure guidelines.

Table 12-1. Average Human Ability to Perceive Changes in Noise Levels

NOISE-LEVEL CHANGE (dB(A))	HUMAN PERCEPTION
0 to 2	Not perceptible to most listeners
2 to 3	Barely perceptible
5	Readily perceptible
10	Clearly perceptible

Source: Bolt Beranek and Newman, Inc. June 1973. *Fundamentals and Abatement of Highway Traffic Noise*, Report No. PB-222-703. Prepared for FHWA.

Table 12-2. Range of Recognizable Noise Levels

SOUND SOURCE	TYPICAL NOISE LEVEL dB(A)
Military jet, air raid siren	130
Amplified rock music	110
Jet takeoff at 500 meters	100
Train horn at 30 meters	90
Busy city street, loud shout	80
Highway traffic at 15 meters, train	70
Predominantly industrial area	60
Background noise in an office	50
Public library	40
Soft whisper at 5 meters	30

Source: Cowan, James P. 1994. *Handbook of Environmental Acoustics*, Van Nostrand Reinhold, New York
Egan, M. David. 1988. *Architectural Acoustics*. McGraw-Hill Book Company.

12.1.2.1 Summary Effects of All Tolling Scenarios and Determination of Worst-Case Tolling Scenario

This evaluation considered the effects of noise that would result from changes in traffic patterns as a result of implementation of the CBD Tolling Alternative. Potential increases in noise levels would be the result of changes in traffic characteristics that would produce higher noise levels than the No Action Alternative. These characteristics include changes in vehicle types, volumes, and travel speeds. Because the CEQR screening methodology is a high-level screening analysis technique, it considers only traffic volumes and vehicle classification, and does not account for the potential noise effects from changes in traffic speeds. CEQR exceedances occur, when the screening analysis shows a 3 dB(A) or greater increase in noise exposure with the Project versus the No Action Alternative. When this occurs, more detailed traffic noise modeling using the FHWA Traffic Noise Model (TNM version 2.5) would be performed; these detailed analyses, if required, would consider changes in traffic speeds. An adverse effect is defined to occur if the TNM analysis shows 3 dB(A) or greater increase in noise levels with the Project at the affected receptor site.

Because potential increases in noise levels are partly tied to instances where there would be increases in vehicular traffic, the ***[largest]*** potential noise exposure across the tolling scenarios should be consistent with the highest incremental increase in traffic volumes. Those findings described in **Subchapter 4B, "Transportation: Highways and Local Intersections"** found Tolling Scenario D to be the representative tolling scenario ***[with the largest potential traffic increases]*** based on the modeled level of traffic diversions; Tolling Scenario D is similar to Tolling Scenarios E and F, with comparable levels of traffic diversion. Tolling scenarios without extensive crossing credits (Tolling Scenarios A, B, C, and G) would have little or no incremental increases in traffic; therefore, there would be little or no increases in traffic noise exposure. The Tolling Scenario D traffic volumes were used for the 24-hour bridge and tunnel Passenger Car Equivalent (PCE) noise analysis in **Section 12.3.2.1** and for the local street peak-hour PCE analysis in **Section**

12.3.2.2. However, an exception would occur for the Downtown Brooklyn local street intersections, where Tolling Scenario C was used as the more representative tolling scenario.*[2]*

12.1.2.2 CEQR Noise Criteria

The *CEQR Technical Manual* contains exterior noise exposure guidelines as well as required attenuation values to maintain an acceptable interior noise environment inside buildings. **Table 12-3** shows these values. Noise exposure is classified into four principal categories: "Clearly Acceptable," "Marginally Acceptable," "Marginally Unacceptable," and "Clearly Unacceptable." The CEQR guidelines are based on maintaining an acceptable interior noise level, defined as an L_{10} value of 45 dB(A) or less for residential properties and hotels.

In addition to providing guidelines for acceptable interior noise environment, CEQR defines an adverse effect[3] as occurring when a project "build condition" exterior $L_{eq(1hr)}$ noise level—estimated at a sensitive receptor, such as a residence, play area, park, school, library or house of worship—exceeds a future "no action scenario" by more than 3 dB(A). The 3 dB(A) threshold is used because it represents a doubling of the Project traffic PCE volume over the No Action Alternative

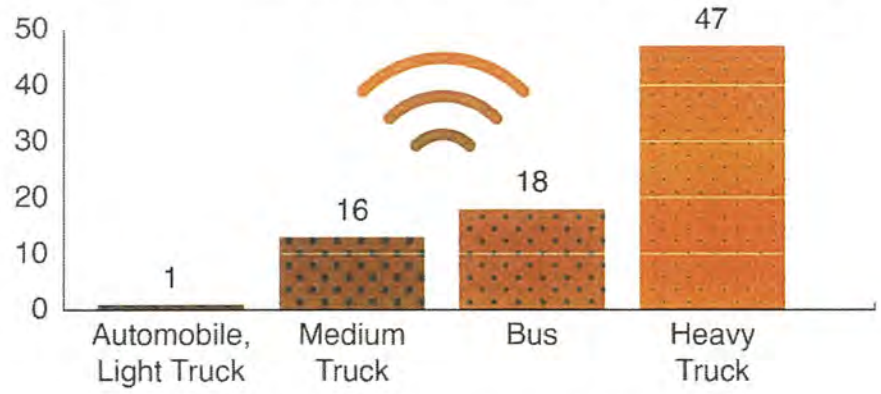
12.1.2.3 CEQR Guidance for Estimating Projected Noise-Level Changes

The *CEQR Technical Manual* sets forth guidelines and procedures for determining potential changes to traffic noise generated as a result of a project and the effects those changes would have on the affected communities. Pursuant to these guidelines, the assessment requires converting the traffic volume into the various vehicle types (i.e., cars, trucks, and buses) traveling on each evaluated roadway to PCE values. For example, the PCE value for an automobile is 1 unit, 16 units for one medium truck, 18 units for one bus and 47 units for one heavy truck (**Figure 12-1**). In coordination with the traffic studies, hourly volumes were converted to PCEs based on the different vehicle types on each evaluated roadway. For each traffic movement, a logarithmic ratio of the hourly CBD Tolling Alternative PCEs divided by the hourly No Action Alternative PCEs was computed. A ratio increasing by 100 percent (doubling) or more would represent an increase of 3 dB(A) or higher in future L_{eq} values under the CBD Tolling Alternative, which would trigger a more detailed noise analysis using the FHWA TNM to verify the increase is accurate. On the other hand, a change of less than 3 dB(A) would indicate no adverse effect and would warrant no further action.

[2 For the Final EA, the Project Sponsors committed to additional mitigation measures (see Chapter 16, "Summary of Effects," Table 16-2). These new mitigation commitments neither require a change in the tolling scenarios used for the analyses in the EA nor change the fundamental conclusions of the EA (see Chapter 3, "Environmental Assessment Framework," Section 3.3.3).]

[3] CEQR terminology refers to an adverse effect as a "significant adverse impact."

Figure 12-1. Traffic Noise Comparison in Passenger Car Equivalents (PCEs)



Source: City of New York's *City Environmental Quality Review Technical Manual*

Table 12-3. New York City Environmental Quality Review External Noise Exposure Guidelines

RECEPTOR TYPE[1]	TIME PERIOD	ACCEPTABLE GENERAL EXTERNAL EXPOSURE	AIRPORT EXPOSURE[3]	MARGINALLY ACCEPTABLE GENERAL EXTERNAL EXPOSURE	AIRPORT EXPOSURE[3]	MARGINALLY UNACCEPTABLE GENERAL EXTERNAL EXPOSURE	AIRPORT EXPOSURE[3]	CLEARLY UNACCEPTABLE GENERAL EXTERNAL EXPOSURE	AIRPORT EXPOSURE[3]
1. Outdoor area requiring serenity and quiet[2]		$L_{10} \leq 55$ dB(A)							
2. Hospital, Nursing Home		$L_{10} \leq 55$ dB(A)	$L_{dn} \leq 60$ dB(A)	55 $L_{10} \leq 65$ dB(A)	$L_{dn} \leq 65$ dB(A)	65 $L_{10} \leq 80$ dB(A)	$L_{dn} \leq 70$ dB(A)(i) 65	L_{10} 80 dB(A)	L_{dn} 75 dB(A)
3. Residence, residential hotel or motel	7 AM–10 PM	$L_{10} \leq 65$ dB(A)		65 $L_{10} \leq 70$ dB(A)		70 $L_{10} \leq 80$ dB(A)		L_{10} 80 dB(A)	
	10 PM–7 AM	$L_{10} \leq 55$ dB(A)		55 $L_{10} \leq 70$ dB(A)		70 $L_{10} \leq 80$ dB(A)		L_{10} 80 dB(A)	
4. School, museum, library, court, house of worship or transient hotel or motel, public meeting room, auditorium, out-patient public health facility		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)	
5. Commercial or office		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)		Same as Residential Day (7 AM–10 PM)	
6. Industrial, public areas only[4]	Note[4]	Note[4]		Note[4]		Note[4]		Note[4]	

Source: New York Department of Environmental Protection (adopted policy 1983).

(i) In addition, any new activity shall not increase the ambient noise level by 3 dB(A) or more.

1 Measurements and projections of noise exposures are to be made at appropriate heights above site boundaries as given by American National Standards Institute Standards; all values are for the worst hour in the time period.

2 Tracts of land where serenity and quiet are extraordinarily important and serve an important public need and where the preservation of these qualities is essential for the area to serve its intended purpose. Such areas could include amphitheaters, parks or portions of parks or open spaces dedicated or recognized by appropriate local officials for activities requiring special qualities of serenity and quiet. Examples are grounds for ambulatory hospital patients and patients and residents of sanitariums and old-age homes.

3 One may use the Federal Aviation Administration-approved L_{dn} contours supplied by the Port Authority of New York and New Jersey, or the noise contours may be computed from the Federally approved Integrated Noise Model using data supplied by the Port Authority of New York and New Jersey.

4 External Noise Exposure standards for industrial areas of sounds produced by industrial operations other than operating motor vehicles or other transportation facilities are spelled out in the New York City Zoning Resolution, Sections 42-20 and 42-21. The referenced standards apply to M1, M2, and M3 manufacturing districts and to adjoining residence districts. (Performance standards are octave band standards.)

The PCE methodology does not account for traffic travel speed, but the traffic studies showed that the Project would result in a reduction in traffic volumes on many of the streets, particularly near and within the Manhattan CBD. Given the low posted speed limits for city streets (25 miles per hour) and limited-access highways (50 miles per hour or less), as well as the general lack of free-flow conditions, any potential increases in travel speed resulting from lower traffic volumes are not anticipated to result in perceptible noise increases.

12.2 AFFECTED ENVIRONMENT

As described in **Subchapter 4B, "Transportation: Highways and Local Intersections,"** the traffic study areas chosen to assess potential changes in traffic volumes as a result of the Project include 102 intersections primarily grouped around key approaches to the Manhattan CBD (i.e., tunnels and bridges) and the local streets that enter the Manhattan CBD from north of 60th Street. The traffic assessment also includes highway segments leading to these approaches, as well as highways that may see an increase from circumferential diversions around the Manhattan CBD (to avoid the Manhattan CBD toll). The traffic noise assessment took the traffic data information and utilizing a conservative screening assessment determined the resultant noise level changes of the No Action Alternative versus the CBD Tolling Alternative at each of the tunnel and bridge crossings and all 102 intersections.

12.3 ENVIRONMENTAL CONSEQUENCES

12.3.1 No Action Alternative

As set forth in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling"** as well as **Subchapter 4B, "Transportation: Highways and Local Intersections,"** the baseline travel demand model and traffic conditions were developed with pre-COVID-19 pandemic peak volumes and are used to approximate 2023 No Action Alternative conditions, along with known changes to the road network.

12.3.2 CBD Tolling Alternative

Based on the methodology presented in **Section 12.1.2**, the noise assessment was undertaken by first using the traffic assignment data from **Subchapter 4B** to calculate a PCE volume change for the 13 local street study area locations. The PCE volume changes were evaluated compared to the No Action Alternative condition to calculate an estimate of Project-generated incremental changes in noise levels. **Table 12-4** presents the projected noise-level changes derived from PCE calculations under the representative worst-case tolling scenarios (Tolling Scenario D overall and Tolling Scenario C for Downtown Brooklyn intersections) versus the No Action Alternative estimated PCE volumes.

12.3.2.1 Bridge and Tunnel Crossing Noise Assessment

The PCE analysis was completed at the crossings into and out of the Manhattan CBD and at highway crossings north of the Manhattan CBD (e.g., George Washington Bridge, Robert F. Kennedy Bridge). This noise assessment was completed to measure the bulk sound energy that is projected to be generated by vehicles moving into and out of Manhattan across these major entry points, without focusing on a specific

sensitive receptor. Once the traffic leaves these crossings, the volume flow would be absorbed into the local street network, where the local street PCE analysis was performed to determine maximum noise-level changes within each community.

As indicated on **Table 12-4**, for the majority of the bridge and tunnel crossings, the 24-hour PCE-based traffic noise screening analysis projected little, or no noise-level increases between the No Action Alternative and CBD Tolling Alternative. Moreover, those locations with a negative value are projected to see a slight decrease in overall noise exposure. The maximum noise-level increases would remain below the CEQR 3 dB(A) PCE doubling threshold level and is considered barely perceptible to most listeners.

According to the modeling, the highest increases in noise exposure would occur adjacent to the Queens-Midtown and Hugh L. Carey Tunnels. In the former, a 2.7 dB(A) to 2.9 dB(A) increase in noise levels would occur from 11:00 p.m. to 6:00 a.m.; in the latter, a 1.8 dB(A) to 1.9 dB(A) increase would occur from 9:00 p.m. to 6:00 a.m. When using the PCE methodology, small increases in a projected future build condition PCE volume can result in larger projected magnitude increases in noise level changes than may actually occur. (Because the model uses a logarithmic formula, small increases in traffic can seem magnified.) Importantly, the increases predicted at the tunnel portals remain below the threshold (3.0 dB(A)) that would require further analysis to determine whether these increases are adverse. Further, the projected increases also remain below the level of increase that would be perceived by the human ear. Finally, as vehicles disperse from the portals into the local street network, these imperceptible noise increases would be diminished at properties farther away from the immediate portals. The local street analysis, discussed in the next section, supports this conclusion

12.3.2.2 Local Street Noise Assessment

To assess the potential noise exposure of the traffic moving across the major bridge and tunnel crossings into and out of Manhattan on local streets, a localized PCE-based noise screening assessment was completed. The assessment was performed for those communities identified by the Project traffic studies as areas where changes in traffic would likely contribute to changes in noise exposure.

The local street PCE-based assessment was completed for the Project's peak traffic travel-time periods for Tolling Scenario D, except in Downtown Brooklyn where Tolling Scenario C was used because it would result in greater trip generation at that location. These evaluated peak periods consisted of AM, midday, PM, and, in some cases, a late-night assessment period. The traffic analysis determined the addition of the late-night assessment hour.

Table 12-4. Projected Noise-Level Changes (in dB(A)) for CBD Tolling Alternative (Worst-Case Tolling Scenarios D and C)

TIME	ED OCH QUEENSBORO BRIDGE	QUEENS-MIDTOWN TUNNEL (SITE R1)	HUGH L. CAREY TUNNEL (SITE R2)	HOLLAND TUNNEL	LINCOLN TUNNEL	RF BRIDGE – BRONX	RF BRIDGE – MANHATTAN	RF BRIDGE – QUEENS	WILLIAMSBURG BRIDGE	MANHATTAN BRIDGE	BROO LYN BRIDGE	GEORGE WASHINGTON HENRY HUDSON BRIDGES	HENRY HUDSON BRIDGE	VERRA ANO-NARROWS BRIDGE	60TH STREET CROSSINGS	GEORGE WASHINGTON BRIDGE
12 AM	-1.9	2.9	1.8	-0.6	-0.3	0.0	0.5	0.0	-2.4	-1.7	-0.4	0.0	-0.1	0.2	-0.6	0.1
1 AM	-1.9	2.9	1.8	-0.7	-0.4	0.0	0.5	0.0	-2.4	-1.7	-0.3	0.0	-0.1	0.2	-0.6	0.1
2 AM	-1.9	2.9	1.9	-0.7	-0.2	0.0	0.5	0.0	-2.6	-1.7	-0.3	0.0	-0.1	0.3	-0.6	0.1
3 AM	-1.7	2.9	1.8	-0.6	-0.1	0.0	0.4	0.0	-2.9	-1.6	-0.4	0.0	-0.1	0.2	-0.6	0.1
4 AM	-1.6	2.9	1.8	-0.6	0.0	0.0	0.4	0.0	-3.2	-1.7	-0.4	0.0	-0.1	0.2	-0.6	0.1
5 AM	-1.5	2.7	1.8	-0.4	0.2	0.0	0.3	0.0	-3.3	-1.8	-0.5	0.0	-0.1	0.1	-0.6	0.1
6 AM	0.0	0.4	1.1	-0.3	-0.2	0.0	0.2	0.0	-0.3	-0.6	-0.2	0.0	0.0	0.0	-0.2	0.0
7 AM	0.0	0.1	0.6	-0.3	-0.2	0.0	0.2	0.0	-0.1	-0.6	-0.2	0.0	0.0	0.1	-0.2	0.0
8 AM	0.0	0.1	0.7	-0.3	-0.2	0.0	0.3	0.0	-0.1	-0.6	-0.1	0.0	0.0	0.1	-0.2	0.0
9 AM	0.0	0.1	1.0	-0.3	-0.2	0.0	0.3	0.0	-0.2	-0.6	-0.1	0.0	0.0	0.1	-0.2	0.0
10 AM	-0.4	0.4	1.1	-0.5	-0.4	0.0	0.3	0.0	-0.7	-1.8	-0.1	0.0	-0.1	0.2	-0.6	0.1
11 AM	-0.5	0.5	1.5	-0.5	-0.5	0.0	0.3	0.0	-1.0	-1.8	-0.2	0.0	-0.1	0.3	-0.6	0.1
12 PM	-0.8	0.7	1.7	-0.6	-0.5	0.0	0.3	0.0	-1.0	-1.7	-0.2	0.0	-0.1	0.3	-0.6	0.1
1 PM	-0.7	0.4	1.7	-0.6	-0.6	0.0	0.3	0.0	-0.9	-1.7	-0.3	0.0	-0.1	0.2	-0.6	0.1
2 PM	-0.7	0.3	1.1	-0.6	-0.6	0.0	0.4	0.0	-0.7	-1.6	-0.3	0.0	-0.1	0.2	-0.6	0.1
3 PM	-0.7	0.3	0.7	-0.5	-0.7	0.0	0.4	0.0	-0.5	-1.4	-0.3	0.0	-0.1	0.2	-0.6	0.1
4 PM	-0.9	0.7	0.7	-0.3	-0.6	0.0	0.3	0.0	-0.8	-0.4	-0.1	0.0	0.0	0.1	-0.2	0.0
5 PM	-1.0	0.6	0.7	-0.3	-0.6	0.0	0.3	0.0	-0.8	-0.5	-0.1	0.0	0.0	0.1	-0.2	0.0
6 PM	-0.7	0.6	0.8	-0.4	-0.6	0.0	0.3	0.0	-1.0	-0.5	-0.1	0.0	0.0	0.1	-0.2	0.0
7 PM	-0.8	0.8	1.1	-0.4	-0.6	0.0	0.3	0.0	-1.2	-0.5	-0.1	0.0	0.0	0.1	-0.2	0.0
8 PM	-1.5	1.2	1.4	-0.6	-0.3	0.0	0.6	0.0	-1.5	-1.7	-0.4	0.0	-0.1	0.2	-0.6	0.1
9 PM	-1.6	1.7	1.8	-0.6	-0.3	0.0	0.5	0.0	-2.0	-1.7	-0.4	0.0	-0.1	0.2	-0.6	0.1
10 PM	-1.5	2.2	1.8	-0.6	-0.3	0.0	0.5	0.0	-2.2	-1.7	-0.4	0.0	-0.1	0.2	-0.6	0.1
11 PM	-1.8	2.8	1.8	-0.7	-0.2	0.0	0.5	0.0	-2.6	-1.7	-0.4	0.0	-0.1	0.2	-0.6	0.1

Source: WSP, 2022.

The local street noise assessment shows that traffic movements disperse fairly quickly from major crossings into the Manhattan CBD, with lower incremental changes in dB(A) than at the major crossings. The peak-hour, local street intersection-based PCE assessment was completed for the 13 local street traffic analysis areas shown below. **Appendix 12, "Noise,"** contains the details of those findings in the appendix tables noted below:

- Long Island City Traffic Analysis Area (**Table 12-1**)
- Lower Manhattan Traffic Analysis Area (**Table 12-2**)
- Queens-Midtown Tunnel Traffic Analysis Area (**Table 12-3**)
- Red Hook Brooklyn Traffic Analysis Area (**Table 12-4**)
- Upper East Side Traffic Analysis Area (**Table 12-5**)
- Lincoln Tunnel Traffic Analysis Area (**Table 12-6**)
- West Side Highway/Route 9A Traffic Analysis Area (**Table 12-7**)
- Downtown Brooklyn Traffic Analysis Area (**Table 12-8**)
- Robert F. Kennedy Bridge Traffic Analysis Area (**Table 12-9**)
- Upper West Side Traffic Analysis Area (**Table 12-10**)
- Little Dominican Republic (Washington Heights) Traffic Analysis Area (**Table 12-11**)
- Lower East Side Traffic Analysis Area (**Table 12-12**)
- Jersey City, New Jersey (**Table 12-13**)

The local street PCE-based analysis identified the maximum noise exposure level changes that potentially would occur during peak travel periods. The analysis findings indicate that no roadways would experience a 3 dB(A) or more noise-level increase. Noise-level changes at approximately 90 percent of the roadways analyzed would range from -1 dB(A) to +1 dB(A), and less than 1 percent would show an increase between 1 dB(A) and 2 dB(A). There are a few isolated turning movements, as described below, that result in noise level increases in the range of 2 to 2.5 dB(A). However, these maximum noise level increases were determined using the PCE ratio values for a single sub-movement, and the PCE sum of all the sub-movements (for example right turn, through and left turn) on a given roadway segment would result in lower overall noise level increases than the values shown below.

The PCE-based analysis found that noise levels would remain below the 3 dB(A) CEQR threshold for the evaluated travel-time periods within all Long Island Rail Road (LIRR) 13 traffic analysis areas and therefore no TNM analysis was found warranted to verify if a 3 dB(A) or greater increase in noise exposure would occur. The highest projected noise-level increase would occur during the midday time period in the Lower Manhattan Traffic Analysis Area (**Appendix 12, "Noise," Table 12-2**) adjacent to Trinity Place and Edgar Street (Intersection #1), where a 2.5 dB(A) increase is projected to occur along the eastbound left-turn movement. Other locations yielding a noise-level increase between 2 dB(A) and 2.5 dB(A) would occur in the peak PM time period on the following roadway segments:

- The Long Island City Traffic Analysis Area (**Appendix 12, "Noise," Table 12-1**) at Intersection #1a (Pulaski Bridge/11th Street and Jackson Avenue), at both the eastbound left-turn and through approaches, where 2.4 dB(A) and 2.1 dB(A) increases are projected, respectively.

- The Long Island City Traffic Analysis Area (**Appendix 12, "Noise," Table 12-1**) at Intersection #7 (11th Street and Borden Avenue), at the southbound right-turn, though, and left-turn approaches, where 2.3 dB(A), 2.2 dB(A), and 2.3 dB(A) increases are projected, respectively.
- The Robert F. Kennedy Bridge Traffic Analysis Area (**Appendix 12, "Noise," Table 12-9**) at Intersection #2 (East 125th Street and Second Avenue), at the southwest-bound left- and right-turn approaches, where 2.1 dB(A) increases are projected at each approach.

The maximum approach noise-level changes in a given direction would be lower than the approach sub-movement values shown above, as these values would include the PCE values for all the movements in a given direction; therefore, these maximum noise-level increase estimates represent an overstatement of overall noise-level changes on a given roadway segment direction.

In conclusion, local street PCE analysis findings indicate that the projected noise-level increases would be below the CEQR 3 dB(A) screening threshold necessary to warrant a more detailed analysis using the FHWA TNM and noise exposure levels with the Project would remain within their current CEQR exterior noise exposure categories. As a result, the CBD Tolling Alternative would result in no noise effects within any of the communities evaluated.

12.4 CONCLUSION

A traffic noise assessment was completed in those communities identified by the Project traffic studies **(Subchapter 4B, "Transportation: Highways and Local Intersections")** as areas where changes in traffic would likely contribute to changes in noise exposure. Potential noise-level changes resulting from the variations in traffic patterns due to the Project were determined using the passenger car equivalent (PCE) screening methodology outlined in Chapter 19 of the *CEQR Technical Manual*. CEQR defines a noise level increase of more than 3 dB(A) over comparable future no build (i.e., no action) conditions to result in an adverse impact.

The PCE-based assessment was completed for Project peak AM, midday, PM, and late-night time periods at the following 13 traffic analysis areas:

- Long Island City
- Lower Manhattan
- Queens-Midtown Tunnel
- Red Hook Brooklyn
- Upper East Side
- Lincoln Tunnel
- West Side Highway/Route 9A
- Downtown Brooklyn
- Robert F. Kennedy Bridge
- Upper West Side
- Little Dominican Republic

- Lower East Side
- Jersey City, New Jersey

The PCE analysis found that projected noise-level changes on all roadways in the Project area would be below the 3 dB(A) CEQR impact threshold. Furthermore, because changes in noise levels of less than 3 dB(A) are barely perceptible to the human ear, ambient noise levels with the Project would not be perceptibly different from those without the Project.

Noise-level changes at approximately 90 percent of the evaluated roadways would range from -1 dB(A) to +1 dB(A), and less than 1 percent of the roadways evaluated would show an increase between 1 dB(A) and 2 dB(A). Based on the conservative PCE analysis, the highest reported increase is projected to occur adjacent to the Queens Midtown Tunnel portal area with a 2.9 dB(A) increase during the late night hours with the nearest sensitive property located more than 100 feet away. The overall Project study area would result in a net decrease in traffic noise exposure along most local roadways evaluated.

As a result, the CBD Tolling Alternative would result in no noise impacts within the evaluated traffic analysis areas (**Table 12-5**).

Table 12-5. Summary of Effects of the CBD Tolling Alternative on Noise

SUMMARY OF EFFECTS	LOCATION	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Imperceptible increases or decreases in noise levels resulting from changes in traffic volumes	Bridge and tunnel crossings	The maximum noise level increases (2.9 dB(A)), which were predicted adjacent to the Queens-Midtown Tunnel in Tolling Scenario D, would not be perceptible.	No	▪ No mitigation needed. No adverse effects ▪ See overall Project enhancement below.
	Local streets	Tolling Scenario C was used to assess noise level changes in Downtown Brooklyn, Tolling Scenario D was used at all other locations assessed. The maximum predicted noise level increases (2.5 dB(A)), which were at Trinity Place and Edgar Street, would not be perceptible. There was no predicted increase in noise levels in the Downtown Brooklyn locations.	No	
Overall Project Enhancement. The Project Sponsors commit to ongoing monitoring and reporting of potential effects of the Project, including, for example, traffic entering the Manhattan CBD; taxi/FHV VMT in the Manhattan CBD; transit ridership from providers across the region; bus speeds within the Manhattan CBD; air quality and emissions trends; parking; and Project revenue. Data will be collected in advance and after implementation of the Project. A formal report on the effects of the Project will be issued one year after implementation and then every two years. In addition, a reporting website will make data, analysis, and visualizations available in open data format to the greatest extent [practicable]. Updates will be provided on at least a bi-annual basis as data becomes available and analysis is completed.				

13. Natural Resources

13.1 INTRODUCTION

This chapter describes the effects of implementing the CBD Tolling Alternative on general ecology, wildlife resources, and water resources (collectively, natural resources), consistent with NYSDOT *The Environmental Manual*.[1]

13.2 AFFECTED ENVIRONMENT

Natural resources were evaluated within the local study area for tolling infrastructure and tolling system equipment (local study area) as shown in **Chapter 3**, "**Environmental Analysis Framework,**" **Figure 3-2a through Figure 3-2g**. **Figures 13-1 through 13-3** show terrestrial natural resources and wetlands, floodplains, and the designated New York State Coastal Area within and near the local study area. The Project would be located within a highly urbanized environment that consists of buildings, paved surfaces, and transportation infrastructure with limited natural resources.

13.2.1 Wetlands

13.2.1.1 New York State Jurisdiction Wetlands

The New York State Department of Environmental Conservation (NYSDEC) Environmental Resource Mapper,[2] Freshwater Wetland maps for Manhattan do not show any freshwater wetlands or freshwater wetland adjacent areas (100-foot buffer) regulated by NYSDEC under Article 24 of the New York State Environmental Conservation Law (ECL) within the local study area.

NYSDEC regulates portions of the shoreline of the Hudson River and East River under ECL Article 25 as littoral zone tidal wetlands[3] (**Figure 13-1**). NYSDEC also regulates activities within an adjacent area, potentially consisting of the area within 150 feet of a tidal wetland or up to the 10-foot above mean sea level elevation contour. The adjacent area does not extend landward past a stabilized shoreline structure present as of 1977. Because the shoreline in the local study area was stabilized before 1977, none of the local study area is regulated tidal wetlands adjacent area.[4]

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1 NYSDOT. 2010. *The Environmental Manual*. https://www.dot.ny.gov/divisions/engineering/environmental-analysis/manuals-and-guidance/epm.

2 https://gisservices.dec.ny.gov/gis/erm/.

3 Lands under tidal waters extending seaward from shore to a depth of 6 feet at mean low water (and that are not identified in any other NYSDEC tidal wetland category). NYSDEC tidal wetland maps accessed from http://opdgig.dos.ny.gov/.

4 Per 6 NYCRR Part 661.4, the regulated adjacent area ends at "the seaward edge of the closest lawfully and presently existing (i.e., as of August 20, 1977), functional and substantial fabricated structure (including, but not limited to, paved streets and highways, railroads, bulkheads and sea walls, and rip-rap walls) which lies generally parallel to said most tidal wetland landward boundary and which is a minimum of 100 feet in length as measured generally parallel to such most landward boundary, but not including individual buildings."

Figure 13-1. National Wetlands Inventory and NYSDEC Mapped Wetlands and Existing Parkland

Source: U.S. Fish and Wildlife Service, May 2021; NYSDEC, 2016.

13.2.1.2 Federal Jurisdiction Wetlands

The U.S. Fish and Wildlife Service (USFWS) National Wetlands Inventory (NWI) has mapped the Hudson River and East River adjacent to the local study area as subtidal estuarine wetlands with unconsolidated bottoms (E1UBL) (see **Figure 13-1**). Immediately north of the local study area, the Pond in Central Park is an NWI-mapped palustrine[5] wetland with an unconsolidated bottom that is diked and permanently flooded. The CBD Tolling Alternative would not involve any activities in the Hudson River, the East River, or the Pond in Central Park.

13.2.2 Surface Waters and Navigable Waters

The Hudson and East Rivers are Waters of the United States and navigable waters regulated by the U.S. Army Corps of Engineers (USACE), and are protected under Article 15 of the New York State ECL. The Pond in Central Park is protected under NYSDEC regulations (6 NYCRR Part 608).

13.2.3 Wild, Scenic, and Recreational Rivers

NYSDEC has no designated Study or Inventory State Wild, Scenic, or Recreational Rivers within or adjacent to the local study area. The local study area also does not include any rivers listed on the Nationwide Rivers Inventory List of National Wild and Scenic Rivers.

13.2.4 Floodplains

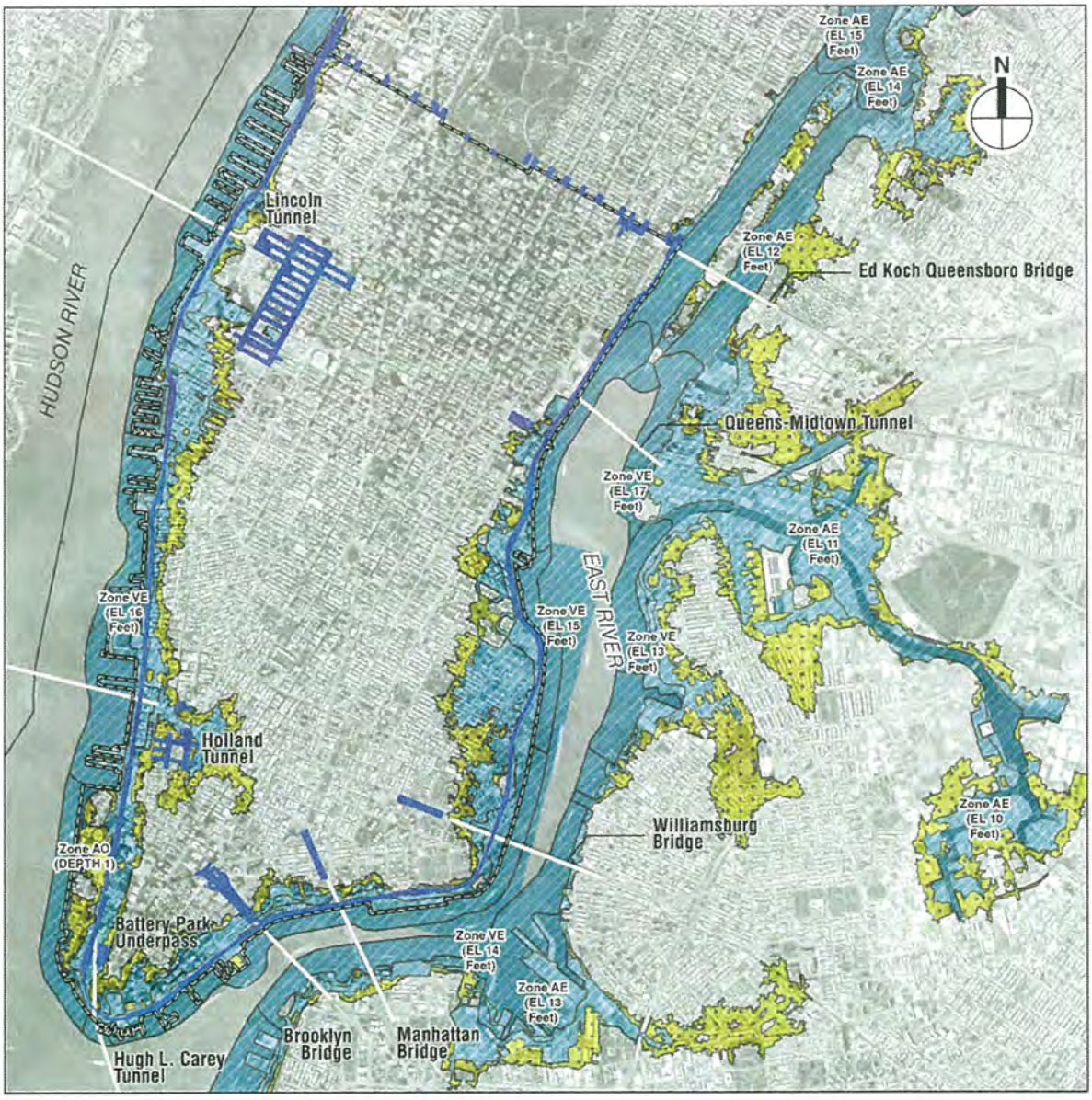
Figure 13-2 shows that portions of the local study area are within the 100-year floodplain (the area with a 1 percent chance of flooding in any given year) and 500-year floodplain (0.2 percent chance of flooding in any given year) of the East River and Hudson River.

13.2.5 Coastal Resources

Portions of the local study area are within the designated New York State Coastal Area (**Figure 13-3**), and therefore, the Project is subject to a coastal zone policies consistency review. The local study area is not in or near any coastal erosion hazard areas regulated by the State of New York pursuant to 6 NYCRR Part 505 and ECL Article 34. The local study area also does not include any areas regulated by the Coastal Barrier Resources Act or the Coastal Barrier Improvement Act.

[5] Palustrine wetlands are nontidal wetlands characterized by the presence of trees, shrubs, and emergent vegetation.

Figure 13-2. Federal Emergency Management Agency 2015 Preliminary Flood Insurance Rate Map



Source: Federal Emergency Management Agency, January 2015/New York State GIS Program Office. New York City Orthoimagery, 6-inch resolution.

Figure 13-3. New York City Coastal Zone Boundary

Source: New York City Coastal Zone Boundary; New York City Department of City Planning, November 2018.

13.2.6 Groundwater Resources, Aquifers, and Reservoirs

In the Manhattan CBD, groundwater is generally at least 10 feet below the surface. NYSDEC aquifer data files show that the local study area is not in an identified Primary Water Supply or Principal Aquifer Area. No Sole Source Aquifers regulated by the U.S. Environmental Protection Agency are present in the local study area. New York City receives its drinking water from a system of aqueducts and reservoirs north of the city boundaries. No municipal drinking water wells, wellhead influence zones, or drinking water reservoirs are in or near the local study area.[6, 7]

13.2.7 Stormwater Management

In the Manhattan CBD, stormwater runoff generally flows into catch basins, and then into the city's combined sewer system. The discharge of stormwater and sanitary waste differ during dry weather and storm events. The City of New York's State Pollutant Discharge Elimination System permits govern these discharges. The New York City Department of Environmental Protection regulates stormwater discharges from development lots to the city sewer system under Chapter 31 of Title 15 of the Rules of the City of New York.

13.2.8 General Ecology and Wildlife Resources

The terrestrial ecological communities of the local study area are highly urbanized and can be considered "terrestrial cultural communities."[8, 9] These vegetated ecological communities provide limited ecological value. Adjacent to the local study area, terrestrial ecological communities and related natural resources are largely limited to parks (e.g., Central Park and East River Park). Given the limited habitat areas in the local study area, wildlife diversity and bird populations, in general, are low and limited to common native and nonnative species adapted to urban conditions. This may include migratory birds protected by the Migratory Bird Treaty Act.[10]

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6 NYSDEC. Area Hydrography mapping. http://gis.ny.gov/gisdata/metadata/alis.hydrography.areahydrography.xml#Top.

7 https://www1.nyc.gov/site/dep/water/drinking-water.page.

8 Edinger, G.J., D.J. Evans, S. Gebauer, T.G. Howard, D.M. Hunt, and A.M. Olivero (editors). 2014. *Ecological Communities of New York State*. Second Edition. A revised and expanded edition of Carol Reschke's *Ecological Communities of New York State*. 1990. New York Natural Heritage Program, NYSDEC, Albany, NY.

9 These communities are "created and maintained by human activities, or are modified by human influence to such a degree that the physical conformation of the substrate, or the biological composition of the resident community is substantially different from the character of the substrate or community as it existed prior to human influence." Examples include flower/herb gardens, mowed lawn and mowed lawn with trees, mowed roadside/pathway, paved road/pathway, and urban vacant lot.

10 The Migratory Bird Treaty Act makes it unlawful to pursue, hunt, take, capture, kill, or sell birds listed therein. The statute applies equally to both live and dead birds, and grants full protection to any bird parts, including feathers, eggs, and nests. The USFWS implements the Migratory Bird Treaty Act.

13.2.9 Endangered and Threatened Species

According to USFWS's Information, Planning, and Consultation database (reviewed on May 24, 2022; see **Appendix 13A, "Natural Resources: Natural Resource Correspondence"**), one species has the potential to occur within the local study area, the monarch butterfly. The monarch butterfly is listed as a candidate species, and it currently does not have any protection under Section 7 of the Endangered Species Act (ESA).

Based on a review of the National Oceanic and Atmospheric Administration ESA Section 7 Mapper for the Greater Atlantic Region,[11] several Federally listed marine species could occur in the East River and Hudson River adjacent to the local study area (see **Appendix 13A**). Additionally, the Hudson River has been identified as critical habitat for the New York Bight Distinct Population Segment of Atlantic sturgeon. The CBD Tolling Alternative would not involve any activities in the Hudson River or East River.

Based on a review of the New York Natural Heritage Program database on May 24, 2022, four species listed by the State of New York as endangered or threatened could be present in the local study area: the peregrine falcon (New York State endangered); coastal plain blue-eyed grass (New York State endangered); little ladies' tresses (New York State threatened); and red pigweed (New York State threatened), which was present in or near the local study area in the 1890s and could still be present today.

- Peregrine falcons nest on rocky cliffs near river gorges but can also nest on man-made structures such as bridges and skyscrapers. Peregrine falcons generally mate for life and return to the same nest year after year. In New York, nesting season begins in late winter and ends when the birds migrate south in early autumn. In New York City, nest sites are located high above the ground on buildings and other structures such as bridges. With nests in urban areas with high levels of noise and human activity, peregrine falcons demonstrate a high tolerance of and exposure to disturbance and an ability to exploit resources in human-dominated landscapes.[12, 13]
- Coastal plain blue-eyed grass is a perennial wildflower that grows in grasslands, meadows and fields, sandplains, and barrens.[14] The only potential habitat within the local study area for this species is Central Park.
- Little ladies' tresses is a perennial wildflower that typically grows in dry fields and open woods.[15] The only potential habitat within the local study area for little ladies' tresses is within Central Park.

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11 https://www.fisheries.noaa.gov/new-england-mid-atlantic/consultations/section-7-species-critical-habitat-information-maps-greater.

12 Cade, T.J, M. Martell, P. Redig, G. Septon, and H. Tordoff. 1996. Peregrine falcons in urban North America. In: D.M. Bird, D. Varland, and J. Negro (eds.) Raptors in human landscapes: adaptations to built and cultivated environments. Academic Press, San Diego, CA.

13 White, Clayton M., Nancy J. Clum, Tom J. Cade and W. Grainger Hunt. 2002. Peregrine Falcon (*Falco peregrinus*), The Birds of North America Online (A. Poole, Ed.). Ithaca: Cornell Lab of Ornithology; http://bna.birds.cornell.edu/bna/species/660doi:10.2173/bna.660.

14 Massachusetts Division of Fisheries and Wildlife. 2015. Sandplain Blue-eyed Grass (*Sisyrinchium fuscatum*). Natural Heritage & Endangered Species Program. https://www.mass.gov/doc/sandplain-blue-eyed-grass/download.

15 Newcomb, L., Morrison, G., & Clement, R. C. 1977. Newcomb's wildflower guide: An ingenious new key system for quick, positive field identification of the wildflowers, flowering shrubs and vines of Northeastern and North Central North America.

- Red pigweed occurs in coastal areas including interdunal swales, stony beaches, shorelines of coastal ponds and rivers, salt marshes, brackish soils, and waste places, which is a broadly encompassing term that includes, but is not limited to, abandoned lots, areas containing construction and demolition debris and other refuse, and areas containing contaminated soils. It has also been found in ship ballasts. The natural habitats in which red pigweed is expected to occur do not occur within the local study area. However, areas described as waste places (e.g., abandoned lots, dumping areas, contaminated sites) are present within the local study area. Therefore, red pigweed has the potential to occur within the local study area.

13.2.10 Essential Fish Habitat

The National Marine Fisheries Service Essential Fish Habitat (EFH) Mapper[16] lists EFH for several species potentially present in the Hudson River and East River adjacent to the local study area. The CBD Tolling Alternative would not involve any activities in the Hudson River or East River.

13.2.11 Critical Environmental Areas, Habitat Areas, Wildlife Refuges, and Wildfowl Refuges

According to NYSDEC, the local study area does not have any Critical Environmental Areas or state forest preserve lands.[17, 18] The local study area also is not in or adjacent to any wildlife or waterfowl refuges.

13.3 ENVIRONMENTAL CONSEQUENCES

13.3.1 No Action Alternative

The No Action Alternative would not result in a vehicular tolling program and any associated tolling infrastructure and tolling system equipment; therefore, it would not affect natural resources.

13.3.2 CBD Tolling Alternative

For the most part, the CBD Tolling Alternative would have new tolling infrastructure and tolling system equipment within the transportation right-of-way in developed areas of Manhattan where there are limited natural features. The new tolling system equipment would be on new or existing infrastructure or would consist of infrastructure comparable in form to existing streetlight poles, sign poles, and overhead sign structures on and adjacent to existing transportation infrastructure (e.g., roads, bridges, and sidewalks).

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16 National Marine Fisheries Service Essential Fish Habitat Mapper. https://www.fisheries.noaa.gov/resource/map/essential-fish-habitat-mapper.

17 NYSDEC. Critical Environmental Areas. https://www.dec.ny.gov/permits/6184.html.

18 NYSDEC provides the following definition for state forest preserves: Protected by Article XIV of the New York State Constitution, the Forest Preserve is defined as public lands in the Adirondack and Catskill Parks within "forest preserve counties" as defined by the New York State Legislature. These lands are identified as [ECL 9-0101] "...lands owned or hereafter acquired by the state within the county of Clinton, except the towns of Altona and Dannemora, and the counties of Delaware, Essex, Franklin Fulton, Hamilton, Herkimer, Lewis, Oneida, Saratoga, Saint Lawrence, Warren, Washington, Greene, Ulster and Sullivan,..." https://www.dec.ny.gov/lands/7811.html.

Limited soil disturbance would occur during construction for excavation of foundations for new poles and associated utility connections.

Tolling infrastructure and tolling system equipment is proposed at three locations just inside Central Park near Central Park South (59th Street) where streetlight poles currently exist along the existing park roadway system. Tolling infrastructure and tolling system equipment would be installed on the landside portions of bridges over the East River, but no in-water or over-water activities would occur.

13.3.2.1 Wetlands

New York State Jurisdiction Wetlands

No NYSDEC-regulated freshwater wetlands or regulated freshwater wetland adjacent areas are within the local study area. Therefore, the CBD Tolling Alternative is not subject to the requirements of ECL Article 24.

Tolling infrastructure and tolling system equipment would be installed on the landside portions of bridges that cross the East River. No in-water or over-water activities would occur. Erosion and sediment control measures will be used during construction to protect catch basins, drainage channels, waterways, etc. No construction activities would occur within tidal wetlands or their regulated adjacent areas, and ground disturbance during construction would not affect regulated tidal wetlands. Therefore, New York State ECL Article 25 does not apply to the Project.

Federal Jurisdiction Wetlands

No tolling infrastructure or tolling system equipment would be installed in or over water, and no construction would occur in any Federally regulated wetlands. Erosion and sediment control measures implemented during construction will protect nearby water bodies from adverse effects related to debris and other materials.

13.3.2.2 Surface Waters and Navigable Waters

No in-water or over-water activities would occur as part of the CBD Tolling Alternative. Tolling infrastructure and tolling system equipment would be installed on the landside portions of bridges that cross the East River and on highways adjacent to the East and Hudson Rivers. The installation of tolling infrastructure and tolling system equipment would not change the navigable channels of the East or Hudson Rivers, the navigable clearance of bridges for marine traffic, alter the volume or course of marine traffic, or affect the navigability of the East and Hudson Rivers in any other way. There would be no excavation in, or discharge of dredged or fill material into, surface waters. During construction, TBTA will provide erosion and sediment control measures to protect catch basins, drainage channels, waterways, etc. Therefore, the CBD Tolling Alternative would not affect the Hudson River or East River.

The CBD Tolling Alternative would place tolling infrastructure and tolling system equipment on replacement streetlight poles in Central Park. The closest such poles would be more than 125 feet away from the Pond in Central Park and would have no effect on the Pond in Central Park.

13.3.2.3 Floodplains

Tolling infrastructure and tolling system equipment would be placed on new or replacement poles, existing overhead sign structures, and existing pedestrian bridges that are within mapped floodplains of the Hudson River and East River. The floodplains within the local study area are affected by coastal rather than riverine flooding, and therefore, controlled by tidal conditions, occupation of the floodplain by larger or new poles for the CBD Tolling Alternative would not result in increased flooding within or adjacent to the local study area. The new tolling infrastructure and tolling system equipment would be within and adjacent to the transportation right-of-way and would not impede emergency access or limit the efficacy of natural floodplains. Therefore, the CBD Tolling Alternative would not affect floodplains.

Because the sources of floodwaters in the local study area are tidal, there would be no loss of storage capacity or increase because of permanent structures associated with the CBD Tolling Alternative. The larger or new poles for the CBD Tolling Alternative would not constitute an encroachment, because it would not endanger citizens or workers, cause likely future damage, or notably affect natural or beneficial floodplain values. Therefore, with respect to the findings required by Executive Order 11988, "Floodplains Management":

- A significant encroachment would not occur.
- There would be no significant potential for interruption or termination of a transportation facility that is needed for emergency vehicles.
- There would be no significant effects on natural beneficial floodplain values.

The CBD Tolling Alternative would comply with Executive Order 11988.

13.3.2.4 Coastal Resources

Some of the new tolling infrastructure and tolling system equipment would be within the boundaries of the State of New York's designated Coastal Area (see **Figure 13-3**). The Project Sponsors completed the New York State Coastal Assessment Form and the New York City Waterfront Revitalization Program Consistency Assessment Form (see **Appendix 13B, "Natural Resources: Coastal Zone Consistency Assessments"**). The forms certify that the CBD Tolling Alternative would be implemented consistent with applicable coastal policies. The Project Sponsors will seek concurrence on their coastal zone consistency finding from the New York State Department of State and the New York City Department of City Planning.

13.3.2.5 Groundwater Resources, Aquifers, and Reservoirs

The local study area is not in an identified Primary Water Supply or Principal Aquifer Area and does not have any Sole Source Aquifers. Depending on the type of pole or mounting structure and its configuration, the depth of excavation would range from approximately 2 to 12 feet. This excavation is unlikely to encounter groundwater, which is generally more than 10 feet below grade in the Manhattan CBD.

13.3.2.6 Stormwater Management

Most of the construction for the CBD Tolling Alternative would occur on existing impervious surfaces and would not result in a disturbance of more than one contiguous acre of soil. If applicable, TBTA would require the contractor to obtain coverage under State Pollutant Discharge Elimination System General Permit (GP-0-20-001 or current version, if applicable) for construction. In accordance with the general permit, TBTA would require the contractor to develop a Stormwater Pollution Prevention Plan, which would describe the erosion and sediment control measures that would be implemented during construction. The CBD Tolling Alternative would not result in any permanent changes to the quantity of impervious surfaces in the local study area.

13.3.2.7 General Ecology and Wildlife Resources

The tolling infrastructure and tolling system equipment for the CBD Tolling Alternative would be within and adjacent to existing transportation right-of-way that is highly disturbed and generally unlikely to provide habitat for wildlife.

Trees

Trees regulated by NYC Parks, which include trees in New York City parks and street trees in the public right-of-way, are present in the local study area. TBTA will undertake required tree protection measures. Tree work permits will be obtained as required.[19] If trees must be removed or are damaged during construction, TBTA will follow NYC Parks specifications for all replacement trees, including the planting of new trees or restitution in the form of a monetary payment to the NYC Parks Tree Fund.

Fish, Wildlife, and Waterfowl

Wildlife in the local study area is accustomed to high levels of urban noise. As described in **Chapter 12, "Noise,"** the CBD Tolling Alternative would not result in substantial changes to noise levels, and the effects on wildlife from noise increases would be negligible.

To avoid adverse effects on migratory bird species protected by the Migratory Bird Treaty Act, construction activities that require tree removal will be scheduled outside the early May through July primary bird breeding season to the extent practicable. Should construction activities require tree removal during April or August (i.e., the beginning and end of the breeding period), preconstruction activities will include coordination with FHWA with respect to conducting surveys of active nests. These surveys will be focused on the presence of active nests, eggs, or young in trees targeted for removal. FHWA will be informed of the results before any tree removal begins, and if active nests, eggs, or young are present, the tree will not be removed until after the nest is no longer in active use.[20] These surveys will be undertaken if habitat were

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19 NYC Parks: https://www.nycgovparks.org/trees/street-tree-planting/best-practices.

20 The primary breeding period for most land bird species in New York State and those that breed in New York City specifically spans from approximately the beginning of April through the end of July.
Sommers, L.A. 2008. "Appendix 2: Breeding season table," pp. 635 to 641. *The Second Atlas of Breeding Birds of New York State* (K. McGowan and K. Corwin, eds.). Cornell University Press, Ithaca, NY.

likely to be disturbed. If active nests, eggs, or young are not present, TBTA will inform FHWA of the results before commencing any tree cutting.

Fish and waterfowl would not be affected because the CBD Tolling Alternative would not involve in-water or over-water activities, and tolling infrastructure and tolling system equipment would generally be constructed on and adjacent to transportation right-of-way at heights similar to other infrastructure in the right-of-way and below the heights that would impede migratory patterns.[21]

Therefore, the CBD Tolling Alternative would not adversely affect fish, wildlife, and waterfowl.

13.3.2.8 Endangered and Threatened Species

The ESA does not apply to the CBD Tolling Alternative due to the absence of listed terrestrial species within New York County where the local study area is located; the absence of any in-water activities within the East River and Hudson River or any potential to affect Federally protected species within those waters; and the nature of the activity, which includes construction in disturbed, currently maintained transportation right-of-way and would not involve the removal of any pollinator habitat. The monarch butterfly is listed as a candidate species. Therefore, consultation or conference (formal or informal) with USFWS is not required. No effects to the monarch butterfly are anticipated. The CBD Tolling Alternative would meet the requirements of item 13 "Traffic Management Systems Maintenance (communications cable, hardware for intelligent transportation system, road weather information system, etc.)" on FHWA New York Division's "Activity-Based No Effect List," and no further review or consultation under Section 7 of the ESA is required.[22]

One New York State protected species, the peregrine falcon (listed as endangered in New York State), could be present in the local study area. The CBD Tolling Alternative would not disturb peregrine falcon nesting habitat, forage areas, or nests on bridges and buildings. No tolling infrastructure and tolling system equipment would be mounted directly on the portions of buildings or bridges where peregrine falcons would have a greater potential to nest. At the start of construction, should it be determined that peregrine falcon nesting activities are observed on the signs and/or structural elements, NYSDEC will be consulted to confirm any measures necessary to avoid a take of peregrine falcon nests at that time.

Because habitat for the New York State endangered coastal plain blue-eyed grass and little ladies' tresses may be present in Central Park, a preconstruction survey will be conducted to determine their presence within specific areas of the park where construction would take place. Similarly, surveys for red pigweed

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21 In the Northeast, birds migrate in the greatest volume between altitudes of 500 and 2,000 meters above sea level (La Sorte et al. 2015), and at a minimum altitude of approximately 150 meters above sea level (Horton et al. 2016).

Horton, K.G., Van Doren, B.M., Stepanian, P.M., Farnsworth, A. and Kelly, J.F. 2016. "Where in the air? Aerial habitat use of nocturnally migrating birds." *Biology Letters* 12(11):20160591.

La Sorte, F.A., Hochachka, W.M., Farnsworth, A., Sheldon, D., Van Doren, B.M., Fink, D. and Kelling, S. 2015. "Seasonal changes in the altitudinal distribution of nocturnally migrating birds during autumn migration." *Royal Society Open Science 2(12):150347*.

22 FHWA New York Division. Endangered Species Act, Section 7, Essential Fish Habitat, and Marine Mammal Protection Act: Process for Compliance and Consultation. June 2020. https://www.dot.ny.gov/divisions/engineering/environmental-analysis/manuals-and-guidance/epm/repository/4.4.9.3_AppG_FHWA_ESA_Section_7.pdf.

will occur in the local study area should habitat for this plant be present in the construction locations and if the habitat were likely to be disturbed. If any of these species are found during the surveys, then a protection plan will be developed in consultation with NYC Parks and NYSDEC.

13.3.2.9 Essential Fish Habitat

The CBD Tolling Alternative would not involve any activities in or over the waters of the East or Hudson Rivers nor any discharges to those rivers during construction. Therefore, the CBD Tolling Alternative would result in no effects on EFH.

13.3.2.10 Invasive Species

The CBD Tolling Alternative would be constructed within and adjacent to transportation right-of-way in areas that are predominantly paved. Any soil disturbance would be limited to the removal of existing structures (e.g., foundations and poles) and replacement with new poles and limited construction for utility connections. Any fill used during construction would be clean. The CBD Tolling Alternative would involve limited disturbance to existing vegetation and would not introduce invasive plants. Therefore, the CBD Tolling Alternative would comply with Executive Order 13112, "Invasive Species."

13.4 CONCLUSION

The CBD Tolling Alternative would not involve the installation of tolling infrastructure and tolling system equipment within or over surface waters and wetlands; therefore, it would not affect these resources, including the navigability of the Hudson River and East River and coastal zone polices for the area. There would be tolling infrastructure and tolling system equipment within the designated floodplains, but the installation of this equipment would not alter flood conditions.

Construction of the CBD Tolling Alternative would unlikely encounter groundwater, as most of the construction for the CBD Tolling Alternative would occur on existing impervious surfaces and would not result in a disturbance of more than one contiguous acre of soil. If applicable, TBTA will require the contractor to obtain coverage under State Pollutant Discharge Elimination System General Permit (GP-0-20-001 or current version, if applicable) for construction.

Protected species have the potential to occur within the local study area. The CBD Tolling Alternative would not disturb peregrine falcon nesting habitat, forage areas, or nests on bridges and buildings. A preconstruction survey will be conducted to determine the presence of coastal plain blue-eyed grass, little ladies' tresses, and red pigweed in specific areas where construction would occur; if habitat is identified, then a protection plan (e.g., relocation, propagation) will be developed in consultation with NYC Parks and NYSDEC. TBTA will undertake tree protection measures consistent with the requirements of and in consultation with NYC Parks.

Table 13-1 summarizes the effects of the CBD Tolling Alternative on natural resources***[, and Table 13-2 summarizes how mitigation and enhancement measures will be implemented by the Project Sponsors]***. Overall, the CBD Tolling Alternative would be within and adjacent to existing transportation rights-of-way

that are highly disturbed. With the implementation of measures to protect certain resources during construction, the CBD Tolling Alternative would not adversely affect natural resources.

Table 13-1. Summary of Effects of the CBD Tolling Alternative on Natural Resources

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Construction activities to install tolling infrastructure near natural resources	No effects on surface waters, wetlands, or floodplains. Potential effects on stormwater and ecological resources during construction will be managed through construction commitments. The Project is consistent with coastal zone policies.	No	▪ Implement sediment and erosion control measures and any conditions contained in an approved Stormwater Pollution Discharge Elimination System Permit, if necessary. ▪ Consult with NYSDEC on any measures necessary to avoid a potential take of peregrine falcon nests. ▪ Schedule construction activities that would require tree removal, if applicable, outside the primary bird breeding season. ▪ Undertake a preconstruction survey to determine if coastal plain blue-eyed grass, little ladies' tresses, and red pigweed are present at construction locations and develop a protection plan if found. ▪ Undertake tree protection measures consistent with the requirements of and in consultation with NYC Parks.

[Table 13-2. Summary of the CBD Tolling Alternative Implementation Approach for Mitigation and Enhancement Measures for Natural Resources]

RELEVANT LOCATION(S)	DESCRIPTION OF MITIGATION OR ENHANCEMENT	TIMELINE FOR PRE- AND POST-PROJECT IMPLEMENTATION DATA COLLECTION FOR SPECIFIC MEASURES	THRESHOLD FOR DETERMINING WHEN NEXT STEP(S) WILL BE IMPLEMENTED	TIMING FOR SPECIFIC MEASURES	LEAD AGENCY
Sites of tolling infrastructure and tolling system equipment	Refer to Table 13-1 for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Will occur during design, development, testing, and/or construction as per contract.	TBTA will ensure contractors comply with contract requirements.

13.5 [FINDINGS

13.5.1 Executive Order 11988: Floodplains Management

Because the sources of floodwaters in the local study area are tidal, there will be no loss of storage capacity or increase because of permanent structures associated with the CBD Tolling Alternative. The larger or new poles for the CBD Tolling Alternative will not constitute an encroachment, because it will not endanger citizens or workers, cause likely future damage, or notably affect natural or beneficial floodplain values. Therefore, with respect to the findings required by Executive Order 11988:

- *A significant encroachment will not occur.*
- *There will be no significant potential for interruption or termination of a transportation facility that is needed for emergency vehicles.*
- *There will be no significant effects on natural beneficial floodplain values.*

The CBD Tolling Alternative will comply with Executive Order 11988.

13.5.2 Coastal Zone Management Act

The Project Sponsors prepared a coastal zone consistency assessment for the Project to demonstrate consistency with the Federal Coastal Zone Management Act, the New York State coastal zone policies, and New York City's Local Waterfront Revitalization Act. FHWA and the Project Sponsors sought concurrence on their findings from the New York State Department of State, but they did not receive a response. Based on the information provided in the EA, FHWA concurs that the CBD Tolling Program is consistent with Federal, state, and local coastal zone policies.]

14. Asbestos-Containing Materials, Lead-Based Paint, Hazardous Wastes, and Contaminated Materials

14.1 INTRODUCTION

This chapter discusses the potential for construction activities associated with the CBD Tolling Alternative to encounter contaminants—such as suspect asbestos-containing materials (ACM), lead-based paint, subsurface (i.e., soil and groundwater) contamination, and other hazardous waste and contaminated materials—and describes the measures that would be implemented to address these materials during construction and avoid exposure to humans.

14.2 AFFECTED ENVIRONMENT

The potential to expose ACM, lead-based paint, hazardous wastes, and contaminated materials would occur during construction at locations where the Project Sponsors would install tolling infrastructure and tolling system equipment. This tolling infrastructure and tolling system equipment would be installed at approximately 120 locations in Manhattan, generally in the area south of 61st Street. A variety of infrastructure and equipment types would be used, depending on the location. **Figures 32a through 32g** in **Chapter 3, "Environmental Analysis Framework,"** illustrate the proposed locations for the tolling infrastructure and tolling system equipment. In general, tolling infrastructure would involve replacing existing streetlight poles with new poles in the same location, adding new poles within the transportation right-of-way where none are present today, or modifying existing transportation infrastructure (including sign poles, overhead sign structures, and bridge superstructures) to accommodate new tolling system equipment. The locations of the tolling infrastructure and tolling system equipment comprise the local study area for this assessment of ACM, lead-based paint, hazardous wastes, and contaminated materials.

TBTA would require that the contractor test and dispose of all soils according to applicable Federal, state, and local waste management regulations, including Title 6 of the New York Codes, Rules, and Regulations (NYCRR). To date, the contractor has tested 35 anticipated tolling infrastructure and tolling system equipment locations. This section describes the results of the testing to date.

Soil waste classification testing was conducted between May 2020 and August 2021 by GTA Engineering Services, Inc. at locations where soil is to be disturbed/excavated as part of the Project's construction. The analyses conducted were consistent with those required by the New York State Department of Environmental Conservation (NYSDEC) to evaluate soil quality for the management of environmental conditions during construction, including laboratory analysis for volatile organic compounds, semi-volatile organic compounds, pesticides, herbicides, polychlorinated biphenyls (PCBs), and metals. Soil encountered during the testing comprised fill materials—which are the byproduct of the reworking of soil during construction or the filling of shoreline to increase Manhattan's land mass—was often imported to the area to raise the grade. Such materials can include wastes and byproducts (such as coal ash), which can contain

contaminants (such as lead and arsenic) at higher concentrations than found naturally, and organic compounds (such as polycyclic aromatic hydrocarbons [PAHs]), which are byproducts of combustion.

Results of the analysis generally showed levels of organic compounds and metals well below NYSDEC Part 375 Unrestricted Use Soil Cleanup Objectives or laboratory minimum detection limits. Samples from approximately 30 percent of the locations detected marginally more elevated levels of organic compounds and metals; however, the specific compounds (PAHs and metals) were detected at levels consistent with the presence of urban fill and within applicable NYSDEC Part 375 Restricted Residential Use Soil Cleanup Objectives. Concentrations of mercury detected at two locations were more elevated but were nonetheless at levels typically found in urban fill throughout New York City. Analysis of the samples via the Resource Conservation and Recovery Act Toxicity Characteristic Leaching Procedure did not detect hazardous levels of contaminants, including at locations with identified elevated mercury concentrations. Based on the history of the area, the known history of filling, and the levels and distribution of contaminants detected by the waste classification testing, identified conditions demonstrate the presence of the urban fill and not a release or spill.

It is also possible for soil and groundwater to become contaminated by migration of contaminants from nearby activities, such as a current or previous gasoline service station. Such contamination, which is generally highly localized and typically found at or below the water table (which is generally deeper than 10 feet below surface grade in Manhattan), would not likely be encountered during the shallow disturbance associated with construction of the CBD Tolling Alternative. Nor was such contamination identified by any of the waste classification testing conducted by GTA Engineering, Inc.

14.3 ENVIRONMENTAL CONSEQUENCES

14.3.1 No Action Alternative

The No Action Alternative would not implement a vehicular tolling program. The No Action Alternative would not involve any ground disturbance, removal, or alteration of existing structures, or change in the production or transport of hazardous wastes or contaminated materials. Therefore, the No Action Alternative would not result in any effects from exposure to or removal of hazardous wastes or the production or removal of contaminated materials.

14.3.2 CBD Tolling Alternative

Construction of the CBD Tolling Alternative would result in soil disturbance and the potential alteration, removal, or disturbance of existing roadway infrastructure and utilities that could contain ACM, lead-based paint, or PCBs. Therefore, its construction could encounter and disturb ACM, lead-based paint, PCBs, hazardous wastes, or contaminated materials. Construction will also require the management of the urban fill identified by the waste classification testing.

Tolling system equipment would be mounted on existing infrastructure, which could require minor alterations to support the new equipment, or tolling system equipment would be on new or replacement infrastructure, such as new streetlight poles. The installation of tolling infrastructure and tolling system equipment would require subsurface utility connections. Depending on the pole type and configuration, excavation areas would range from approximately 11 to approximately 80 square feet, and the depth of excavation would range from approximately 2 to approximately 12 feet below grade. Although not anticipated, if excavation below the water table is necessary, it would be done in accordance with New York City Department of Environmental Protection and NYSDEC requirements. The volume of excavated material at any location would be up to approximately 15 cubic yards. Additional trenching (approximately 2 feet below grade) could be required for utility connections.

Construction would involve subsurface disturbance of soil and fill that could contain heavy metals (e.g., lead and arsenic) and/or organic contaminants (e.g., PAHs) at concentrations higher than natural background levels. It is possible that other types of contamination from historic releases could be present at some locations; however, no such conditions were identified by GTA Engineering, Inc.'s soil testing.

Construction activities associated with the CBD Tolling Alternative are common and routinely occur in the local study area. Established regulatory programs mandate specific control measures for disturbance of these types of materials. Through its contract documents, TBTA will require the contractor to implement the following plans and adhere to specific protocols developed to be consistent with Federal, State of New York, and City of New York regulations and requirements:[1]

- Prepare and implement a Waste Handling Plan describing procedures to comply with regulations and best management practices for identifying, collecting, handling, storing, and disposing of solid waste generated during construction.
- Prepare and implement a Construction Health and Safety Plan that would identify potential hazards that could be encountered during construction and specify measures to ensure that subsurface disturbance is performed in a manner that protects workers, the community, and the environment.
- Employ best management practices and comply with Federal and state requirements if petroleum storage tanks or contamination be encountered, including for release reporting to NYSDEC (17 NYCRR Parts 32.3 and 32.4).
- For disturbed areas and stockpiled materials (e.g., excavated soil, construction fill, building debris) that have not been restored and would not be disturbed for a period of 21 days, stabilize these areas within 14 days of initial disturbance by use of mulching, seeding, geotextile fabric, or other approved methods; securely cover stockpiles at the end of each workday.

[1] TBTA would require its contractor to comply with all applicable Federal, State of New York, and local laws, codes, rules, and regulations, including, but not limited to, the regulations of the U.S. Environmental Protection Agency, Occupational Safety and Health Administration, NYSDEC, New York State Department of Health, New York State Department of Labor, and the New York City Department of Environmental Protection.

- Dispose of waste and demolition and excavation material at an approved site in accordance with Federal, state, and local laws and regulations.
- Upon completion of construction, restore the ground surface to its preconstruction condition; if uncapped soils would remain exposed, conduct testing to ensure soils are clean and there is no risk of human exposure to hazardous wastes or contaminated materials.
- If necessary, the importation of certified clean fill would be conducted to replace surficial urban fill where a solid cap (i.e., asphalt, concrete, etc.) is not currently present or would not be restored.
- Employ the following measures to minimize fugitive dust emissions from construction activities: cover disturbed soil and stockpiled materials or treat these materials with dust suppressors; use dust-tight protective shields; use vacuuming, wet mopping, wet sweeping, or wet power brooming in lieu of dry power brooming or air blowing; use only wet cutting of stone, concrete, and/or asphalt; inspect vehicles for dirt prior to their leaving the work site and remove dirt, soils, or rubble likely to be dislodged during transit; comply with local requirements for covering trucks and other equipment used to transport soils and other construction materials.
- Prepare an Emergency Response Plan and Contingency Plan detailing procedures to follow in the event of an accident, emergency situation, or release or spill of hazardous wastes during construction.
- Sample any paint that would be removed for lead and other heavy metals or presume that the paint is lead-based paint; remove lead-based paint in accordance with the Occupational Safety and Health Administration Standard 1926.62 (Lead) and perform lead abatement and disposal in accordance with safety and health codes and Federal and state regulations.
- Perform an asbestos survey of any suspect ACM that may be disturbed by construction, and if such materials are present and would be disturbed, perform asbestos abatement and disposal in accordance with state and Federal regulations.

With these measures in place, construction of the CBD Tolling Alternative would not result in adverse effects associated with hazardous waste and contaminated materials. Once operational, there would be no human exposure pathways to any residual hazardous materials, so operation of the CBD Tolling Alternative would also not result in effects related to contaminated or hazardous materials.

14.4 CONCLUSION

The CBD Tolling Alternative would involve replacing existing or installing new infrastructure to support tolling system equipment, including the excavation of subsurface soil. GTA Engineering Services, Inc. conducted soil testing to identify the potential contamination in subsurface soil based on the known history of development of the Project area (including manufacturing and industrial facilities), which also involved extensive landfilling and regrading resulting in the formation of non-native urban fill with a wide range of potential contaminants. Soil testing found that contaminated soils could be disturbed by the Project's construction, although the soil characteristics were typical of urban fill in the Manhattan CBD.

The Project Sponsors have developed measures to anticipate and address potential contaminants that are typical in urban settings. TBTA will ensure that these measures are implemented during construction of the CBD Tolling Alternative, which would avoid or minimize any potential adverse effects resulting from potential exposure. **Table 14-1** summarizes the potential effects of the CBD Tolling Alternative and commitments to mitigate the effects*[, and Table 14-2 summarizes how mitigation and enhancement measures will be implemented by the Project Sponsors]*.

Table 14-1. Summary of Effects of the CBD Tolling Alternative Related to Asbestos-Containing Materials, Lead-Based Paint, Hazardous Waste, and Contaminated Materials

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Potential for disturbance of existing contaminated or hazardous materials during construction	Soil disturbance during construction and the potential alteration, removal, or disturbance of existing roadway infrastructure and utilities that could contain ACM, lead-based paint, or other hazardous substances. Potential effects will be managed through construction commitments.	No	Refer to Section 14.3.2 for a list of commitments that the Project Sponsors will undertake to address ACM, lead-based paint, hazardous waste, and contaminated materials.

[Table 14-2. Summary of the CBD Tolling Alternative Implementation Approach for Mitigation and Enhancement Measures for Asbestos-Containing Materials, Lead-Based Paint, Hazardous Waste, and Contaminated Materials]

RELEVANT LOCATION(S)	DESCRIPTION OF MITIGATION OR ENHANCEMENT	TIMELINE FOR PRE- AND POST-PROJECT IMPLEMENTATION DATA COLLECTION FOR SPECIFIC MEASURES	THRESHOLD FOR DETERMINING WHEN NEXT STEP(S) WILL BE IMPLEMENTED	TIMING FOR SPECIFIC MEASURES	LEAD AGENCY
Sites of tolling infrastructure and tolling system equipment	Refer to Section 14.3.2 for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Will occur during design, development, testing and/or construction as per contract.	TBTA will ensure contractors comply with contract requirements.

15. Construction Effects

15.1 INTRODUCTION

This chapter describes the potential construction effects related to implementing the CBD Tolling Alternative.

15.2 AFFECTED ENVIRONMENT

The locations where construction of tolling infrastructure and tolling system equipment would occur are predominantly transportation rights-of-way, including roads, bridges, tunnel entrances and exits, and sidewalks. Limited work would also be required at sites along roadways in and along the edges of Central Park and on the structure of the High Line.

15.3 ENVIRONMENTAL CONSEQUENCES

15.3.1 No Action Alternative

The No Action Alternative would not implement a vehicular tolling program and would not involve any construction activities. Therefore, the No Action Alternative would have no construction-related effects.

15.3.2 CBD Tolling Alternative

Construction activities for the CBD Tolling Alternative would involve reusing or replacing existing traffic and tolling infrastructure to install tolling system equipment along transportation rights-of-way within and near the Manhattan CBD. The overall duration of construction for the CBD Tolling Alternative is expected to be less than one year. At each location, the total construction duration would generally be approximately one to two weeks, although inclement weather or other unforeseen conditions could extend the duration of construction at individual locations. Concurrent construction at multiple sites would likely occur to allow efficient construction management.

Construction activities would be typical of those required for the installation of streetlight poles and tolling infrastructure throughout the city. At most locations, the CBD Tolling Alternative would require the replacement of existing poles or installation of new poles. Construction activities would include excavating and constructing the foundation(s), placing the new support poles or structures, attaching the tolling system equipment, and restoring the roadway, sidewalk, or ground surface. Depending on the type of pole or mounting structure and its configuration, excavation areas would range from 11 square feet to approximately 80 square feet, and the depth of excavation would range from 2 feet to approximately 12 feet below grade. The volume of excavated material at any location would be up to approximately 15 cubic yards. At locations where tolling infrastructure and tolling system equipment are installed, additional

trenching, approximately 2 feet below grade, could be required for utility and communications connections. At those locations where new connections are needed, trenches would be dug from each pole to the nearest utility access point and conduits would be laid in the trenches. Once the new connections are installed, trenches would be covered and returned to their original condition.

Although not anticipated, if excavation below the water table is necessary, it would be done in accordance with New York City Department of Environmental Protection (NYCDEP) and New York State Department of Environmental Conservation (NYSDEC) requirements.

Construction activities would include the use of mini excavators, skid steer loaders, small foundation drilling equipment, pavement saws, bucket trucks, boom trucks, truck-mounted equipment for placing new infrastructure, concrete deliveries, dump trucks for the removal and delivery of soil and materials, and flatbed trucks to deliver equipment and materials. Hand-held equipment would be used to excavate and construct the foundations and to repair the roadway and/or sidewalk surface at the conclusion of construction. Approximately four to six construction workers and two to three trucks would be present for the entirety of the workday at each construction site, and additional individuals would be present throughout the workday to deliver materials or supervise and inspect work.

Temporary lane closures would be needed to accommodate construction work at most locations. Most construction work would occur during the weekday, during daytime hours, unless the localized short-term lane closures required would result in substantial disruptions to traffic. For operations that require access across a larger portion of the roadway, and/or where daytime lane closures are not practical because of traffic concerns, construction would occur at night (10 p.m. to 5 a.m.). The contractor would coordinate construction work with the NYCDOT Office of Construction Management Coordination for work on city streets and the Brooklyn, Manhattan, Williamsburg, and Ed Koch Queensboro Bridges and in accordance with a Maintenance and Protection of Traffic Plan. The Project Sponsors would coordinate with the Port Authority of New York and New Jersey for work near the Lincoln and Holland Tunnels, as necessary. Coordination with NYSDOT and NYC Parks would occur for any work within or near their facilities.

Construction activities for the CBD Tolling Alternative would result in the following temporary effects on the built and natural environment:

- **Regional Traffic:** There would be approximately one to two weeks of traffic disruption at any individual location over the less than one year duration of construction. Any temporary changes in traffic operations would not have the potential to change regional travel patterns.
- **Highways, Local Traffic, and Parking:** The duration of lane closures at any individual location would be approximately one to two weeks. Individual lane closures could last from several hours up to several days. No streets would be fully closed to traffic, except when staging or lifting operations may require a short-period closure (up to several hours) for the safety of construction workers and the traveling public. TBTA, acting on behalf of the Project Sponsors, and the contractor would coordinate on the scheduling of construction activities to minimize neighborhood disruptions to the extent practicable. As specified in the contract, the contractor would support communication strategies by TBTA that seek

to inform the affected public about roadway closures, commuter alternatives, and any potential effects on traffic during construction.

- **Transit:** Construction would occur on streets and sidewalks with bus routes and bus stops, within a block of the Roosevelt Island Tramway station at Second Avenue and East 60th Street, and near some subway station entrances. If a bus stop must be temporarily relocated to install tolling infrastructure and tolling system equipment, TBTA would coordinate with NYCDOT and New York City Transit (NYCT) to temporarily relocate the stop to a nearby location. TBTA would ensure that construction of the CBD Tolling Alternative would not affect access to the Roosevelt Island Tramway station or subway station entrances.
- **Pedestrians and Bicycles:** Individual sidewalk and bicycle lane closures could last from several hours up to multiple days during the approximately one- to two-week construction period. Sidewalks would only be closed for pedestrians potentially to accommodate staging or lifting operations for a short period (up to several hours) for the safety of construction workers and the traveling public. TBTA would implement temporary pedestrian and bicycle detours if necessary for public safety, to protected sections of the adjacent travel lane or to the opposite side of the street. To the extent practical, TBTA and the contractor would avoid restricting access to bicycle docking stations. Construction activities within and adjacent to transportation rights-of-way would be subject to approval by the applicable transportation agency.
- **Social and Economic Conditions:** Construction of the CBD Tolling Alternative would result in limited and temporary disturbances and inconveniences, of short duration, to residents, workers, visitors, and businesses in areas where construction work is taking place, and would not result in any lasting adverse effects to social and economic conditions. TBTA will ensure that the contractor maintains access to businesses and residences along affected roadways during construction.
- **Parks and Recreational Resources:** Construction would take place adjacent to some New York City parks, but would not affect access to those parks. It would also occur within Central Park where park roadways approach Central Park South (59th Street) and along the sidewalks abutting the park on Fifth Avenue and Central Park West. In Central Park, trenches would be dug for utility connections, and the surface would be restored to its original condition. The CBD Tolling Alternative would attach tolling equipment to the underside of the High Line. Park users would be able to use these parks throughout construction, and construction would not result in any lasting impairment of the enjoyment of these publicly accessible open spaces. Construction may be required within 50 feet of NYC Parks-regulated trees, which include street trees and trees in city parks. TBTA will avoid effects to regulated trees to the extent feasible. If construction activities could affect a regulated tree, the work would comply with the measures set on the following pages.
- **Historic and Cultural Resources:** Construction would occur in streets and sidewalks adjacent to historic properties (see **Appendix 8, Historic and Cultural Resources: Section 106 Finding Documentation,** for a list of historic properties that would be close to construction sites. There would be no adverse effects on historic properties. As described in **Chapter 8, "Historic and Cultural Resources,"** the proposed areas for excavation have already been heavily disturbed, and it is unlikely that any archaeological resources

would be encountered. See the preceding bullet for construction activities within and adjacent to Central Park and the High Line, which are listed or eligible for listing on the State and National Registers of Historic Places.

- **Visual Resources:** Construction vehicles and equipment would install tolling infrastructure and tolling system equipment, and signage, cones, and Jersey barriers would direct vehicle and pedestrian traffic around construction zones. While the equipment and detours could temporarily impair views for some viewer groups, construction would be of short duration and would not have any lasting adverse effects on visual resources.
- **Air Quality:** Use of diesel-fuel-powered construction equipment and generators would produce pollutant emissions. Excavation to install new tolling infrastructure and tolling system equipment would also expose soils beneath streets and sidewalks, which could result in airborne dust. The brief duration and limited nature of construction at each construction site would limit emissions. TBTA will ensure the contractor employs measures to limit and avoid adverse effects on air quality.
- **Noise:** Jackhammers, pavement breakers, backhoes, compressors, generators, trucks, and other equipment would generate noise. The use of this equipment would last from a few minutes on one day up to a few hours on multiple days during the approximately one- to two-week construction period at each location. Jackhammers and pavement breakers generate the highest noise levels of the anticipated construction equipment, with a sound level of 85 to 89 decibels at 50 feet from the source. The changes in noise associated with certain construction equipment would be perceptible to people near the construction zones. TBTA will ensure that the contractor complies with the New York City Noise Code and other measures to minimize the effects of construction noise.[1]
- **Natural Resources:** As described in **Chapter 13, "Natural Resources,"** there are limited natural features where new tolling infrastructure and tolling system equipment would be installed. The endangered coastal plain blue-eyed grass and New York State's threatened red pigweed and little ladies' tresses may be present in areas where construction would occur, and their presence will be confirmed prior to construction. Peregrine falcons nest on bridges within New York City, but construction activities associated with the CBD Tolling Alternative are unlikely to affect them. Use of sediment control measures and tree protection measures will limit potential adverse effects on natural resources. Overall, the potential to disturb natural resources during construction would be minimal.
- **Asbestos-Containing Materials, Lead-Based Paint, Hazardous Wastes, and Contaminated Materials:** Construction of the CBD Tolling Alternative would result in soil disturbance and the potential alteration or removal of existing structures (e.g., streetlight poles) that may contain asbestos or lead-based paint. TBTA will ensure that the contractor manages hazardous wastes and contaminated materials according to established practices, described in **Chapter 14, "Asbestos-Containing Materials, Lead-Based Paint, Hazardous Wastes, and Contaminated Materials."**

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[1] Local Laws of the City of New York, Local Law 113 of 2005. https://www1.nyc.gov/assets/dep/downloads/pdf/air/noise/noise-code-full-version.pdf

TBTA, acting on behalf of the Project Sponsors, will ensure that the contractor complies with measures to avoid and minimize construction effects set forth below and in **Chapter 14, "Asbestos-Containing Materials, Lead-Based Paint, Hazardous Wastes, and Contaminated Materials."**

- Develop a Maintenance and Protection of Traffic Plan for all work in public streets and sidewalks; coordinate with NYCDOT's Office of Construction Management Coordination for any proposed detours and coordinate with NYCDOT's Bike Unit and Pedestrian Unit for any bicycle lane detours, effects on bicycle docking stations, and/or pedestrian detours; and coordinate with NYCT for any potential temporary changes in bus stops.
- Avoid interference with existing utilities to the extent practicable. Where the Project's construction could conflict with existing utilities, coordinate with the utility owner and protect in place or relocate existing utilities per utility owner requirements.
- Comply with the Diesel Emissions Reduction Act of 2006, including best available retrofit technology or ultra-low sulfur diesel fuel for construction vehicles.
- Comply with the New York City Noise Code and apply best practices such as using manufacturer's noise reduction devices on construction equipment, operating construction devices at lower engine speeds, wrapping loud equipment in noise-insulating material, using quieter backup alarms, and training construction workers in quieter work methods; prepare and implement a Construction Noise Mitigation Plan, which would include a Construction Noise Monitoring Plan, noise control measures used to reduce or eliminate noise effects, and mitigation techniques to be used during construction.
- Acquire tree work permits whenever construction would occur within 50 feet of a NYC Parks-regulated tree, including street trees and trees in city parks; should trees be damaged during construction, plant new trees or provide restitution in the form of a monetary payment to the NYC Parks Tree Fund; follow NYC Parks specifications for new trees.
- Schedule construction activities that could require tree removal outside the primary bird breeding season of early May through July, to the extent practicable; should construction activities require tree removal during April or August (i.e., the beginning and end of the bird breeding season), the Project Sponsors would coordination with FHWA with respect to surveys of active nests.
- Undertake a survey to determine if coastal plain blue-eyed grass, little ladies' tresses, and red pigweed are present at construction locations within the Manhattan CBD. If species are found, then develop a protection plan in consultation with NYC Parks and NYSDEC.
- If applicable, obtain coverage under the New York State Pollutant Discharge Elimination System General Permit for Stormwater Discharges from Construction Activities (GP-0-20-001 or current version, if applicable). In accordance with the general permit, develop and implement a Stormwater Pollution Prevention Plan.
- Provide erosion and sediment control measures to protect catch basins, drainage channels, and waterways; prevent debris or other materials from entering drainage systems, per site-specific soil erosion and sediment control countermeasures.

- Implement communications strategies to inform the public about lane closures, commuter alternatives, and any potential temporary impacts on traffic during construction; develop a communications plan with strategies for outreach during construction.

15.4 CONCLUSION

Construction associated with the CBD Tolling Alternative would be typical of street construction that occurs regularly within the Manhattan CBD. Construction would result in temporary disruptions to traffic and pedestrian patterns and temporary noise disruption at nearby land uses such as residences and businesses. The Project Sponsors will require the contractor to develop and comply with plans and procedures to minimize construction effects. With these measures and because of the brief timeframe, low intensity, and limited scope of construction of the CBD Tolling Alternative, adverse construction effects would not occur.

Table 15-1 summarizes the construction effects of the CBD Tolling Alternative and commitments to minimize or mitigate the effects*[, and Table 15-2 summarizes how mitigation and enhancement measures will be implemented by the Project Sponsors]*.

Table 15-1. Summary of Construction Effects of the CBD Tolling Alternative

SUMMARY OF EFFECTS	EFFECT FOR ALL TOLLING SCENARIOS	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
Potential disruption related to construction for installation of tolling infrastructure	Temporary disruptions to traffic and pedestrian patterns, and noise from construction activities, with a duration of less than one year overall, and approximately two weeks at any given location. These effects will be managed through construction commitments.	No	Refer to Section 15.3.2 for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.

[Table 15-2. Summary of the CBD Tolling Alternative Implementation Approach for Mitigation and Enhancement Measures for Construction Effects]

RELEVANT LOCATION(S)	DESCRIPTION OF MITIGATION OR ENHANCEMENT	TIMELINE FOR PRE- AND POST-PROJECT IMPLEMENTATION DATA COLLECTION FOR SPECIFIC MEASURES	THRESHOLD FOR DETERMINING WHEN NEXT STEP(S) WILL BE IMPLEMENTED	TIMING FOR SPECIFIC MEASURES	LEAD AGENCY
Sites of tolling infrastructure and tolling system equipment	Refer to Section 15.3.2 for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Will occur during design, development, testing and/or construction as per contract.	TBTA will ensure contractors comply with contract requirements.

16. Summary of Effects

16.1 INTRODUCTION

The Council on Environmental Quality's regulations implementing NEPA require Federal agencies to consider the reasonably foreseeable effects of a proposed action before a project can be approved. This chapter summarizes the direct, indirect, and cumulative effects of the CBD Tolling Alternative as discussed in the previous chapters of this Environmental Assessment (EA). It also summarizes the effects of the tolling scenarios and additional sensitivity analyses for the CBD Tolling Alternative, and it describes the results for a scenario that incorporates the Long Island Rail Road (LIRR) East Side Access Project into the background condition and presents the cumulative effects of East Side Access and the CBD Tolling Alternative.

16.2 SUMMARY OF DIRECT AND REASONABLY FORESEEABLE EFFECTS IDENTIFIED IN THIS EA

Chapters 4 through 15 of this EA present the direct, indirect, and cumulative effects of the Project. **Table 16-1** summarizes these effects and measures to avoid or minimize potential adverse effects***[, and Table 16-2 summarizes how the measures will be implemented by the Project Sponsors]***.

16.2.1 Direct Effects

The CBD Tolling Alternative would change travel patterns in the regional study area and the Manhattan CBD, resulting in an overall reduction in trips in the regional study area and the Manhattan CBD. The CBD Tolling Alternative could cause localized increases in traffic on highway segments and at local intersections because some drivers would alter their trip or divert around the Manhattan CBD to avoid the toll. The Project Sponsors will conduct a monitoring program and implement mitigation measures to alleviate adverse effects on traffic operations. Changes in travel patterns associated with the CBD Tolling Alternative would not result in any potential adverse effects on air quality or noise.

As described in other chapters of this EA, the new tolling infrastructure and tolling system equipment would be similar in form to streetlight poles and signs already present, and in many locations would replace existing infrastructure in the same location. As such, the tolling infrastructure and tolling system equipment associated with the CBD Tolling Alternative would not adversely affect nearby parks, historic properties, natural resources, visual character, or neighborhood character where they are installed. Construction activities for the CBD Tolling Alternative would involve installing tolling infrastructure and tolling system equipment along transportation rights-of-way within and near the Manhattan CBD. This would be similar to typical construction activities for the installation of new traffic lights or streetlights typically used throughout the city.

Where the CBD Tolling Alternative would require new poles or mounting structures, construction activities would include the following:

- Excavating and constructing the foundation(s)
- Placing the new support poles or structures
- Attaching the tolling system equipment and making utility connections
- Restoring the roadway and/or sidewalk surface

The overall duration of construction for the CBD Tolling Alternative would be approximately one year or less, and at each location, the total construction duration would be approximately two weeks. While construction activities could result in temporary effects in the neighborhoods where construction would occur due to sidewalk or traffic-lane closures and noise generated by construction equipment, TBTA would require the contractor to implement protocols and plans to minimize construction disruptions to the extent feasible and practical. Overall, based on the short duration and limited magnitude of work, construction activities would not have adverse effects in the neighborhoods where construction would occur.

16.2.2 Indirect Effects

Chapters 4 through 15 of this EA describe the potential effects of the CBD Tolling Alternative on the New York City metropolitan region, using a regional study area consisting of 28 counties. This EA examines effects of the Project in 2023, when the CBD Tolling Alternative would become operational, and in 2045, to identify any lasting effects of the Project.

The CBD Tolling Alternative would not create or extend the transportation network in a manner that would lead to long term induced growth in the region. As shown in **Subchapter 4A, "Transportation: Regional Transportation Effects and Modeling,"** the Project would result in congestion relief within the Manhattan CBD through the reduction of vehicle trips and overall VMT. In the 2045 analysis year, the CBD Tolling Alternative would reduce vehicle trips entering and leaving the Manhattan CBD by a range of 13 percent (Tolling Scenario A) to 18 percent (Tolling Scenario E). This would result in a reduction in the regional VMT ranging from 0.2 percent (Tolling Scenario A) to 0.5 percent (Tolling Scenario E). These reductions in VMT would occur throughout the region, with the greatest percentage change in the Manhattan CBD and less change in the counties on Long Island, north of New York City, New Jersey, and Connecticut.

These changes would support the regional economy by enhancing regional mobility but would not be of a magnitude that would induce growth or larger changes. Generally, the CBD Tolling Alternative would decrease volumes on area highways and roadways to, from, and within the Manhattan CBD, resulting in less congestion and improved travel speeds and travel times for motorists who continue to use these roads, except for a limited number of locations where traffic volumes would increase as drivers adjust their routes to avoid the Manhattan CBD. In tolling scenarios with crossing credits that make the tolls similar among currently tolled bridges and tunnels and untolled bridges, people may alter their current routes to shorter or more direct routes since they would no longer take certain routes to avoid a toll. In local neighborhoods where traffic increases would occur, the changes in traffic volumes and patterns would not change community character or land uses in the nearby area (refer to **Subchapter 5B, "Social Conditions: Neighborhood Character"**).

Table 16-1. Summary of Effects of the CBD Tolling Alternative with Tolling Scenarios Detail

EA CHAPTER / ENVIRONMENTAL CATEGORY	TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
					A	B	C	D	E	F	G		
4A – Transportation: Regional Transportation Effects and Modeling	Vehicle Volumes	Decreases in daily vehicle trips to Manhattan CBD overall. Some diversions to different crossings to Manhattan CBD or around the Manhattan CBD altogether, depending on tolling scenario. As traffic, including truck trips, increase on some circumferential highways, simultaneously there is a reduction in traffic on other highway segments to the CBD. Diversions would increase or decrease traffic volumes at local intersections near the Manhattan CBD crossings. Overall decrease in vehicle-miles traveled (VMT) in the Manhattan CBD and region overall in all tolling scenarios and some shift from vehicle to transit mode.	Crossing locations to Manhattan CBD	% increase or decrease in daily vehicles entering the Manhattan CBD relative to No Action Alternative	-15%	-16%	-17%	-19%	-20%	-18%	-17%	No	No mitigation needed. Beneficial effects
	Auto Journeys to Manhattan CBD		Manhattan CBD	% Increase or decrease in worker auto journeys to Manhattan CBD relative to No Action Alternative	-5%	-5%	-7%	-9%	-11%	-10%	-6%	No	No mitigation needed. Beneficial effects
				Absolute increase or decrease in daily worker auto trips to Manhattan CBD relative to No Action Alternative	-12,571	-12,883	-17,408	-24,017	-27,471	-24,433	-14,578		
	Truck Trips Through Manhattan CBD		Manhattan CBD	Increase or decrease in daily truck trips through Manhattan CBD (without origin or destination in the CBD) relative to No Action Alternative	-4,645 (-55%)	*[-4,967]* (-59%)	-5,253 (-63%)	-5,687 (-68%)	-6,604 (-79%)	-6,784 (-81%)	*[-1,734]* (-21%)	No	No mitigation needed. Beneficial effects
	Transit Journeys		Manhattan CBD	% Increase or decrease in daily Manhattan CBD-related transit journeys relative to No Action Alternative	+1 to +3%							No	No mitigation needed. No adverse effects
	Traffic Results		Manhattan CBD	% Increase or decrease in daily VMT relative to No Action Alternative	-9% to -7%							No	No mitigation needed. Beneficial effects in Manhattan CBD, New York City (non-CBD), north of New York City, and Connecticut; although there would be VMT increases in Long Island and New Jersey, the effects would not be adverse.
			NYC (non-Manhattan CBD)		-1 to 0%								
			New York north of NYC		-1% to 0%								
			Long Island		Less than (+) 0.2% change								
			New Jersey		Less than (+) 0.2% change								
			Connecticut		Less than (+) 0.2% change								

EA CHAPTER / ENVIRONMENTAL CATEGORY	TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
					A	B	C	D	E	F	G		
4B – Transportation: Highways and Local Intersections	Traffic – Highway Segments	The introduction of the CBD Tolling Program may produce increased congestion on highway segments approaching on circumferential roadways used to avoid Manhattan CBD tolls, resulting in increased delays and queues in midday and PM peak hours on certain segments in some tolling scenarios: • Westbound Long Island Expressway (I-495) near the Queens-Midtown Tunnel (midday) Approaches to westbound George Washington Bridge on I-95 (midday) • Southbound and northbound FDR Drive between East 10th Street and Brooklyn Bridge (PM) • Other locations will see an associated decrease in congestion particularly on routes approaching the Manhattan CBD	10 highway segments (AM)	Highway segments with increased delays and queues in peak hours that would result in adverse effects	0 out of 10 highway corridors in the analyzed tolling scenario (Tolling Scenario D)							Yes	Mitigation needed. The Project Sponsors will implement a monitoring plan prior to implementation with post-implementation data collected approximately three months after the start of ***[tolling]*** operations and including thresholds for effects; if the thresholds are reached or crossed, the Project Sponsors will implement Transportation Demand Management (TDM) measures, such as ramp metering, motorist information, signage at all identified highway locations with adverse effects upon implementation of the Project. ***[NYSDOT owns and maintains the relevant segments of the Long Island Expressway and I-95. The relevant segment of the FDR Drive is owned by NYSDOT south of Montgomery Street and NYCDOT north of Montgomery Street. Implementation of TDM measures will be coordinated between the highway owners and the owners of any assets relevant to implementing the TDM.]*** Post-implementation ***[of TDM measures]***, the Project Sponsors will monitor effects and, if needed, TBTA will modify the toll rates, crossing credits, exemptions, and/or discounts ***[within the parameters of the adopted toll schedule]*** to reduce adverse effects.
			10 highway segments (midday)		2 out of 10 highway corridors in the analyzed tolling scenario (Tolling Scenario D), as well as Tolling Scenarios E and F								
			10 highway segments (PM)		1 out of 10 highway corridors in the analyzed tolling scenario (Tolling Scenario D), as well as Tolling Scenarios E and F								
	Intersections	Shifts in traffic patterns, with increases in traffic at some locations and decreases at other locations, would change conditions at some local intersections within and near the Manhattan CBD. Of the 102 intersections analyzed, most intersections would see reductions in delay. Potential adverse effects on four local intersections in Manhattan: Trinity Place and Edgar Street (midday); East 36th Street and Second Avenue (midday); East 37th Street and Third Avenue (midday); East 125th Street and Second Avenue (AM, PM)	363 locations (All day)	Number of instances of intersections with an increase in volumes of 50 or more vehicles in the peak hours.	9	10	24	50	48	50	10	Yes	Mitigation needed. ***[NYCDOT]*** will monitor those intersections where ***[potential]*** adverse effects were identified and implement appropriate signal timing adjustments to mitigate the effect, per NYCDOT's normal practice. Enhancement Refer to the overall enhancement on monitoring at the end of this table.
			102 locations (AM)		2	2	3	3	3	3	2		
			102 locations (midday)		1	2	4	16	16	17	0		
			102 locations (PM)		1	1	1	10	9	9	1		
			57 locations (overnight)		5	5	16	21	20	21	5		
			4 locations	Locations with potential adverse effects that ***[will]*** be addressed with signal timing adjustments	0	0	0	4	4	4	0		

EA CHAPTER / ENVIRONMENTAL CATEGORY	TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
					A	B	C	D	E	F	G		
4C – Transportation: Transit	Transit Systems	The Project would generate a dedicated revenue source for investment in the transit system. Transit ridership would increase by 1 to 2 percent systemwide for travel to and from the Manhattan CBD, because some people would shift to transit rather than driving. Increases in transit ridership would not result in adverse effects on line-haul capacity on any transit routes.	New York City Transit	% Increase or decrease in total daily transit ridership systemwide	1.5% to 2.1%							No	No mitigation needed. No adverse effects
			PATH		0.8% to 2.0%								
			Long Island Rail Road		0.6% to 2.0%								
			Metro-North Railroad		0.6% to 1.9%								
			NJ TRANSIT commuter rail		0.3% to 2.3%								
			MTA/NYCT Buses		1.3% to 1.6%								
			NJ TRANSIT Bus		0.5% to 1.1%								
			Other buses (suburban and private operators)		0.0% to 0.9%								
			Ferries (Staten Island Ferry, NYC Ferry, NY Waterway, Seastreak)		2.5% to 3.5%								
			Roosevelt Island Tram		1.7% to 4.1%								
	Bus System Effects	Decreases in traffic volumes within the Manhattan CBD and near the 60th Street boundary of the Manhattan CBD would reduce the roadway congestion that adversely affects bus operations, facilitating more reliable, faster bus trips.	Manhattan local buses	% Increase or decrease at maximum passenger load point	Increases of 0.5% to 1.2%							No	No mitigation needed. No adverse effects
			Bronx express buses		-1.6% to 2.2%								
			Queens local and express buses (via Ed Koch Queensboro Bridge)		2.0% to 2.8%								
			Queens express buses (via Queens-Midtown Tunnel)		-1.3% to 4.1%								
			Brooklyn local and express buses		1.3% to 2.6%								
			Staten Island express routes (via Brooklyn)		3.7% to 4.5%								
			Staten Island express routes (via NJ)		1.0% to 2.8%								
			NJ/West of Hudson buses (via Holland Tunnel)		-1.4% to 1.4%								
			NJ/West of Hudson buses (via Lincoln Tunnel)		0.4% to 1.5%								

EA CHAPTER / ENVIRONMENTAL CATEGORY	TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO							POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
					A	B	C	D	E	F	G		
4C – Transportation: Transit (Cont'd)	Transit Elements	Increased ridership would affect passenger flows with the potential for adverse effects at certain vertical circulation elements (i.e., stairs and escalators) in five transit stations: ▪ Hoboken Terminal, Hoboken, NJ PATH station ▪ Times Sq-42 St/42 St-Port Authority Bus Terminal subway station in the Manhattan CBD (N, Q, R, W, and S; Nos. 1, 2, 3, and 7; and A, C, E lines) ▪ Flushing-Main St subway station, Queens (No. 7 line) ▪ 14th Street-Union Square subway station in the Manhattan CBD (Nos. 4, 5, and 6; and L, N, Q, R, W lines) ▪ Court Square subway station, Queens (No. 7 and E, G, M lines)	Hoboken Terminal–PATH station (NJ) Stair 01/02	Net passenger increases or at stair in the peak hour	45	72	122	164	240	205	139	Yes	Mitigation needed for Tolling Scenarios E and F. TBTA will coordinate with NJ TRANSIT and PANYNJ to monitor pedestrian volumes on Stair 01/02 one month prior to commencing tolling operations to establish a baseline, and two months after Project operations begin. If a comparison of Stair 01/02 passenger volumes before and after implementation shows an incremental change that is greater than or equal to 205, then TBTA will coordinate with NJ TRANSIT and PANYNJ to implement improved signage and wayfinding to divert some people from Stair 01/02, and supplemental personnel if needed.
			42 St-Times Square-subway station (Manhattan) Stair ML6/ML8 connecting mezzanine to uptown 1/2/3 lines subway platform	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	63%	59%	68%	82%	100%	82%	56%	Yes	Mitigation needed. TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, TBTA will coordinate with MTA NYCT to remove the center handrail and standardize the riser, so that the stair meets code without the hand rail. The threshold will be set to allow for sufficient time to implement the mitigation so that the adverse effect does not occur.
			Flushing-Main St subway station (Queens)–Escalator E456 connecting street to mezzanine level	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	116%	91%	108%	116%	100%	133%	72%	Yes	Mitigation needed. TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, MTA NYCT will increase the speed from 100 feet per minute (fpm) to 120 fpm.
			Union Sq subway station (Manhattan)–Escalator E219 connecting the L subway line platform to the Nos. 4/5/6 line mezzanine	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	63%	82%	87%	102%	100%	95%	61%	Yes	Mitigation needed. TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, MTA NYCT will increase the escalator speed from 100 fpm to 120 fpm.

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4C – Transportation: Transit (Cont'd)	Transit Elements (Cont'd)	Increased ridership would affect passenger flows with the potential for adverse effects at certain vertical circulation elements (i.e., stairs and escalators) in five transit stations (cont'd)	Court Sq subway station (Queens)–Stair P2/P4 to Manhattan-bound No. 7 line	Relative increase or decrease in passenger volumes at station OVERALL as compared to Tolling Scenario E (not only at the affected stair or location) in the peak hour, peak period	98%	90%	102%	104%	100%	117%	97%	Yes	Mitigation needed. TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, TBTA will coordinate with MTA NYCT to construct a new stair from the northern end of the No. 7 platform to the street. The threshold will be set to allow for sufficient time to implement the mitigation so that the adverse effect does not occur.
4D – Transportation: Parking	Parking Conditions	All tolling scenarios would result in a reduction in parking demand within the Manhattan CBD of a similar magnitude to the reduction in auto trips into the Manhattan CBD. With a shift from driving to transit, there would be increased parking demand at subway and commuter rail stations and park-and-ride facilities outside the Manhattan CBD.	Manhattan CBD	Narrative	Reduction in parking demand due to reduction in auto trips to CBD							No	No mitigation needed. Beneficial effects
			Transit facilities	Narrative	Small changes in parking demand at transit facilities, corresponding to increased commuter rail and subway ridership							No	No mitigation needed. No adverse effects
4E – Transportation: Pedestrians and Bicycles	Pedestrian Circulation	Increased pedestrian activity on sidewalks outside transit hubs because of increased transit use. At all but one location in the Manhattan CBD (Herald Square/Penn Station), the increase in transit riders would not generate enough new pedestrians to adversely affect pedestrian circulation in the station area. Outside the Manhattan CBD, transit usage at individual stations would not increase enough to adversely affect pedestrian conditions on nearby sidewalks, crosswalks, or corners.	Herald Square/Penn Station NY	Sidewalks, corners, and crosswalks with pedestrian volumes above threshold in AM / PM peak periods	Adverse effects on pedestrian circulation at one sidewalk segment and two crosswalks							Yes	Mitigation needed. ***[NYCDOT]*** will implement a monitoring plan at this location. The plan will include a baseline, specific timing, and a threshold for additional action. If that threshold is reached, ***[NYCDOT]*** will increase pedestrian space on sidewalks and crosswalks via physical widening and/or removing or relocating obstructions.
	Bicycles	Small increases in bicycle trips near transit hubs and as a travel mode	Manhattan CBD	Narrative	Small increases in bicycle trips near transit hubs with highest increases in pedestrian trip share							No	No mitigation needed. No adverse effects
			Outside Manhattan CBD	Narrative	Some shifts from automobile to bicycles							No	No mitigation needed. No adverse effects
	Safety	No adverse effects	Overall	Narrative	No substantial increases in pedestrian volumes or increased safety concerns, including at existing identified high-crash locations. Overall, with fewer vehicular trips entering and exiting the Manhattan CBD, the CBD Tolling Alternative could result in reduced traffic volumes at these locations. This would help to reduce vehicle-vehicle and vehicle-pedestrian conflicts, leading to an overall benefit to safety.							No	No mitigation needed. No adverse effects
5A – Social Conditions: Population	Benefits	Benefits in and near the Manhattan CBD	28-county study area	Narrative	Benefits in and near the Manhattan CBD related to travel-time savings, improved travel-time reliability, reduced vehicle operating costs, improved safety, reduced air pollutant emissions, and predictable funding source for transit improvements. This would positively affect community connections and access to employment, education, healthcare, and recreation for residents.							No	No mitigation needed. Beneficial effects
	Community Cohesion	Changes to travel patterns, including increased use of transit, resulting from new toll	28-county study area	Narrative	Changes to travel patterns, including increased use of transit, as a result of the Project would not adversely affect community cohesion or make it more difficult for people to connect with others in their community, given the extensive transit network connecting to the Manhattan CBD and the small change in trips predicted.							No	No mitigation needed. No adverse effects (see "Environmental Justice" below for mitigation related to increased costs for low-income drivers).

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5A – Social Conditions: Population (Cont'd)	Indirect Displacement	No notable changes in socioeconomic conditions or cost of living so as to induce potential involuntary displacement of residents	Manhattan CBD	Narrative	The Project would not result in the potential for indirect (involuntary) residential displacement. It would not result in substantial changes to market conditions so as to lead to changes in housing prices, given that real estate values in the Manhattan CBD are already high and the many factors that affect each household's decisions about where to live. In addition, low-income residents of the CBD would not experience a notable increase in the cost of living as a result of the Project because of the lack of change in housing costs, the many housing units protected through New York's rent-control, rent-stabilization, and other similar programs, the tax credit available to CBD residents with incomes of up to $60,000, and the conclusion that the cost of goods would not increase as a result of the Project (see "Economic Conditions" below).							No	No mitigation needed. No adverse effects
	Community Facilities and Services	Increased cost for community facilities and service providers in the Manhattan CBD, their employees who drive, and clientele who drive from outside the CBD	Manhattan CBD	Narrative	The Project would increase costs for community service providers that operate vehicles into and out of the Manhattan CBD and for people who travel by vehicle to community facilities and services in the Manhattan CBD, as well as residents of the CBD and employees of community facilities who use vehicles to travel to community facilities outside the CBD. Given the wide range of travel options other than driving, the cost for users to drive to community facilities and services would not constitute an adverse effect on community facilities and services.							No	No mitigation needed. No adverse effects
	Effects on Vulnerable Social Groups	Benefits to vulnerable social groups from new funding for MTA Capital Program	28-county study area	Narrative	The Project would benefit certain vulnerable social groups, including elderly populations, persons with disabilities, transit-dependent populations, and non-driver populations by creating a funding source for the MTA 2020–2024 Capital Program (and subsequent capital programs and by reducing congestion in the Manhattan CBD). Elderly individuals would benefit from the travel-time and reliability improvements to bus service with the CBD Tolling Alternative, as bus passengers tend to be older than riders on other forms of transit, such as the subway and, as described above, bus passengers in the Manhattan CBD would benefit from travel-time savings due to the decrease in congestion. People over the age of 65 with a qualifying disability receive a reduced fare on MTA subways and buses, and elderly individuals with a qualifying disability can also receive MTA's paratransit service, including taxis and FHVs operating on behalf of MTA to transport paratransit users. Elderly people with disabilities and low-income individuals who drive to the Manhattan CBD would be entitled to the same mitigation and enhancements proposed for low-income and disabled populations, in general. Other elderly individuals who drive to the Manhattan CBD would pay the toll.							No	No mitigation needed. No adverse effects
	Access to Employment	Increased cost for small number of people who drive to work	28-county study area	Narrative	Decrease in work trips by driving modes to and within the Manhattan CBD, with an offsetting increase in transit ridership. Those who drive despite the CBD toll would do so based on the need or convenience of driving and would benefit from the reduced congestion in the Manhattan CBD. Negligible effect (less than 0.1%) on travel to employment within the Manhattan CBD and reverse-commuting from the CBD due to the wide range of transit options available and the small number of commuters who drive today.							No	No mitigation needed. No adverse effects
5B – Social Conditions: Neighborhood Character		No notable change in neighborhood character	Manhattan CBD	Narrative	The changes in traffic patterns on local streets are unlikely to change the defining elements of the neighborhood character of the Manhattan CBD.							No	No mitigation needed. No adverse effects
			Area near 60th Street Manhattan CBD boundary	Narrative	Changes in parking demand near the 60th Street CBD boundary (including increases just north of 60th Street and decreases just to the south) would not create a climate of disinvestment that could lead to adverse effects on neighborhood character nor alter the defining elements of the neighborhood character of this area.							No	No mitigation needed. No adverse effects
5C – Social Conditions: Public Policy		No effect	28-county study area	Narrative	The Project would be consistent with regional transportation plans and other public policies in place for the regional study area and the Manhattan CBD.							No	No mitigation needed. No adverse effects

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6 – Economic Conditions	Benefits	Regional economic benefits	28-county study area	Narrative	Economic benefit through congestion relief in terms of travel-time savings and travel-time reliability improvements, which would increase productivity and utility, as well as safety improvements and reduced vehicle operating costs associated with reductions in congestion.							No	No mitigation needed. Beneficial effects
	Economic Effects of Toll Costs	Cost of new toll for workers and businesses in the CBD that rely on vehicles	Manhattan CBD	Narrative	No adverse effects to any particular industry or occupational category in the Manhattan CBD. Given the high level of transit access in the CBD and high percentage of transit share, the toll would affect only a small percentage of the overall workforce. This would not adversely affect operations of businesses in the Manhattan CBD or the viability of any business types, including the taxi/FHV industry.							No	No mitigation needed. No adverse effects *[New in Final EA - Enhancements* *The Project Sponsors commit to establishing a Small Business Working Group (SBWG) that will meet 6 months prior and 6 months after Project implementation, and annually thereafter, to solicit ongoing input on whether and how businesses are being affected.* *As part of mitigation for other topics, TBTA will ensure the overnight toll for trucks and other vehicles is reduced to at or below 50 percent of the peak toll from at least 12:00 a.m. to 4:00 a.m. in the final CBD toll structure; this will also benefit some workers and businesses.]*
	Price of Goods	Cost of new toll would not result in changes in the cost of most consumer goods	Manhattan CBD	Narrative	Unlikely to result in meaningful change in cost for most consumer goods. Any cost increase associated with the new toll in the CBD Tolling Alternative that would be passed along to receiving businesses would be distributed among several customers per toll charge (since trucks make multiple deliveries) especially for businesses, including small businesses and micro-businesses, receiving smaller deliveries. This would minimize the cost to any individual business. Some commodity sectors (construction materials, electronics, beverages) are more prone to increases due to less competition within delivery market.							No	No mitigation needed. No adverse effects
	Taxi and FHV Industry	Depending on the tolling scenario, the toll could reduce taxi and FHV revenues due to a reduction in taxi/FHV VMT with passengers within the CBD. While this could adversely affect individual drivers (see "Environmental Justice" below), the industry would remain viable overall.	28-county study area	Net change in daily taxi/FHV VMT regionwide	-126,993 (-2.9%)	-14,028 (-0.3%)	-73,413 (-1.7%)	-217,477 (-5.0%)	-116,065 (-2.7%)	-4,888 (-1.0%)	-137,815 (-3.2%)	No	No mitigation needed. No adverse effects (see "Environmental Justice" below for mitigation related to effects on taxi and FHV drivers).
				Net change in daily taxi/FHV VMT in the CBD	-21,498 (-6.6%)	+15,020 (+4.6%)	-11,371 (-3.5%)	-54,476 (-16.8%)	-25,621 (-7.9%)	+4,962 (+1.5%)	-27,757 (-8.6%)		
	Local Economic Effects	Changes in parking demand near the 60th Street CBD boundary	Area near 60th Street/ Manhattan CBD boundary	Narrative	Changes in parking demand near the 60th Street Manhattan CBD boundary (including increases just north of 60th Street and decreases just to the south) could jeopardize the viability of one or more parking facilities in the area south of 60th Street but would not create a climate of disinvestment that could lead to adverse effects on neighborhood character.							No	No mitigation needed. No adverse effects
7 – Parks and Recreational Resources		New tolling infrastructure, tolling system equipment, and signage in the southern portion of Central Park	Manhattan CBD	Narrative	The Project would replace four existing streetlight poles at three detection locations in Central Park near 59th Street and on two adjacent sidewalks outside the park's wall. These poles would be in the same locations as existing poles and would not reduce the amount of park space or affect the features and activities of the park. The Project would also place tolling infrastructure beneath the structure of the High Line, outside the park area atop the High Line structure. FHWA through the public involvement process is soliciting public input related to the Project's effects on these parks (see Chapter 19, "Section 4(f) Evaluation)."							No	No mitigation needed. Refer to Chapter 7, "Parks and Recreational Resources," for a listing of measures to avoid adverse effects to parks.
8 – Historic and Cultural Resources		New tolling infrastructure and tolling system equipment on or near historic properties	45 historic properties within the Project's Area of Potential Effects (APE)	Narrative	Based on a review of the Project in accordance with Section 106 of the National Historic Preservation Act, FHWA has determined that the Project would have No Adverse Effect on historic properties and the State Historic Preservation Office has concurred.							No	No mitigation needed. Refer to Chapter 8, "Historic and Cultural Resources," for a listing of measures to avoid adverse effects to historic properties.

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9 – Visual Resources		Changes in visual environment resulting from new tolling infrastructure and tolling system equipment	Area of visual effect	Narrative	Infrastructure and equipment would be similar in form to streetlight poles, sign poles, or similar structures already in use throughout New York City. Cameras included in the array of tolling system equipment would use infrared illumination at night to allow images of license plates to be collected without any need for visible light. The Project would have a neutral effect on viewer groups and no adverse effect on visual resources.							No	No mitigation needed. No adverse effects.
10 – Air Quality		Increases or decreases in emissions related to truck traffic diversions ...Continued below...	Cross Bronx Expressway at Macombs Road, Bronx, NY	Increase or decrease in Annual Average Daily *[Traffic]* (AADT)	3,901	3,996	2,056	1,766	3,757	2,188	3,255	No	No mitigation needed. No adverse effects. Enhancements 1. Refer to the overall enhancement on monitoring at the end of this table. 2. *[TBTA will work with NYC DOHMH]* to expand the existing network of sensors to monitor priority locations and supplement a smaller number of real-time $PM_{2.5}$ monitors to provide insight into time-of-day patterns to determine whether the changes in air pollution can be attributed to changes in traffic occurring after implementation of the Project. *[The Project Sponsors will select the additional monitoring locations in consideration of air quality analysis in the EA and input from environmental justice stakeholders. NYS Department of Environmental Conservation (NYSDEC) and other agencies conducting monitoring will also be consulted prior to finalizing the monitoring approach.]* The Project Sponsors will monitor air quality prior to implementation (setting a baseline) and five years following implementation. Following the initial two-year post-implementation analysis period, ***[and separate from ongoing air quality monitoring and reporting,]*** the Project Sponsors will assess the magnitude and variability of changes in air quality to determine whether more monitoring ***[sites are]*** necessary. *[Data collected throughout the monitoring program will be made available publicly* ***as*** *data becomes available and analysis is completed. Data from the real-time monitors will be available online continuously from the start of pre-implementation monitoring.]* 3. MTA is currently transitioning its fleet to zero-emission buses, which will reduce air pollutants and improve air quality near bus depots and along bus routes. MTA is committed to prioritizing traditionally underserved communities and those impacted by poor air quality and climate change and has developed an approach that actively incorporates these priorities in the deployment phasing process of the transition. ...Continued below...
				Increase or decrease in daily number of trucks	509	704	170	510	378	536	50		
				Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		
			I-95, Bergen County, NJ	Increase or decrease in AADT	9,843	11,459	7,980	5,003	7,078	5,842	12,506	No	
				Increase or decrease in daily number of trucks	801	955	729	631	696	637	-236		
				Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No		
			RFK Bridge, NY	Increase or decrease in AADT	18,742	19,440	19,860	19,932	20,465	20,391	21,006	No	
				Increase or decrease in daily number of trucks	2,257	2,423	2,820	3,479	4,116	3,045	432		

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10 – Air Quality (Cont'd)		Increases or decreases in emissions related to truck traffic diversions (Cont'd)	RFK Bridge, NY (Cont'd)	Potential adverse air quality effects from truck diversions	No	No	No	No	No	No	No	No	Based on feedback received during the outreach conducted for the Project and concerns raised by members of environmental justice communities, TBTA coordinated with MTA NYCT, which is committed to prioritizing the Kingsbridge Depot and Gun Hill Depot, both located in and serving primarily environmental justice communities in Upper Manhattan and the Bronx, when electric buses are received in MTA's next major procurement of battery electric buses, which ***[began]*** in ***[late]*** 2022. This independent effort by MTA NYCT is anticipated to provide air quality benefits to the environmental justice communities in the Bronx
11 – Energy		Reductions in regional energy consumption	28-county study area	Narrative	Reductions in regional VMT would reduce energy consumption							No	No mitigation needed. Beneficial effects
12 – Noise		Imperceptible increases or decreases in noise levels resulting from changes in traffic volumes	Bridge and tunnel crossings	Narrative	The maximum noise level increases (2.9 dB(A)), which were predicted adjacent to the Queens-Midtown Tunnel in Tolling Scenario D, would not be perceptible.							No	No mitigation needed. No adverse effects
			Local streets	Narrative	Tolling Scenario C was used to assess noise level changes in Downtown Brooklyn, Tolling Scenario D was used at all other locations assessed. The maximum predicted noise level increases (2.5 dB(A)), which were at Trinity Place and Edgar Street, would not be perceptible. There was no predicted increase in noise levels in the Downtown Brooklyn locations.							No	Enhancement Refer to the overall enhancement on monitoring at the end of this table.
13 – Natural Resources		Construction activities to install tolling infrastructure near natural resources	Sites of tolling infrastructure and tolling system equipment	Narrative	No effects on surface waters, wetlands, or floodplains. Potential effects on stormwater and ecological resources will be managed through construction commitments. The Project is consistent with coastal zone policies.							No	Refer to Chapter 13, "Natural Resources," for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.
14 – Hazardous Waste		Potential for disturbance of existing contaminated or hazardous materials during construction	Sites of tolling infrastructure and tolling system equipment	Narrative	Soil disturbance during construction and the potential alteration, removal, or disturbance of existing roadway infrastructure and utilities that could contain asbestos-containing materials, lead-based paint, or other hazardous substances. Potential effects will be managed through construction commitments.							No	Refer to Chapter 14, "Asbestos-Containing Materials, Lead-Based Paint, Hazardous Wastes, and Contaminated Materials," for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.
15 – Construction Effects		Potential disruption related to construction for installation of tolling infrastructure	Sites of tolling infrastructure and tolling system equipment	Narrative	Temporary disruptions to traffic and pedestrian patterns, and noise from construction activities, with a duration of less than one year overall, and approximately two weeks at any given location. These effects will be managed through construction commitments.							No	Refer to Chapter 15, "Construction Effects," for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.

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17 – Environmental Justice	Low-income drivers	***[The EA as published in August 2022 found]*** the increased cost to drivers with the new CBD toll would disproportionately affect low-income drivers to the Manhattan CBD who do not have ***[a reasonable]*** alternative for reaching the Manhattan CBD. ***[With further analysis of the population affected and the addition of new mitigation, the Final EA concludes there would not be a disproportionately high and adverse effect on low-income drivers.*** ***...Continued below...]***	28-county study area	Narrative	The increased cost to drivers would ***[occur under]*** all tolling scenarios.							Yes	Mitigation needed. The Project will include a tax credit for CBD tolls paid by residents of the Manhattan CBD whose New York adjusted gross income for the taxable year is less than $60,000. TBTA will coordinate with the New York State Department of Taxation and Finance (NYS DTF) to ensure availability of documentation needed for drivers eligible for the NYS tax credit. TBTA will post information related to the tax credit on the Project website, with a link to the appropriate location on the NYS DTF website to guide eligible drivers to information on claiming the credit. TBTA will eliminate the $10 refundable deposit currently required for E-ZPass customers who do not have a credit card linked to their account, and which is sometimes a barrier to access. TBTA will provide enhanced promotion of existing E-ZPass payment and plan options, including the ability for drivers to pay per trip (rather than a pre-load***[ed]*** balance), refill their accounts with cash at participating retail locations, and discount plans already in place, about which they may not be aware. TBTA will coordinate with MTA to provide outreach and education on eligibility for existing discounted transit fare products and programs, including those for individuals 65 years of age and older, those with disabilities, and those with low incomes, about which many may not be aware. The Project Sponsors commit to establishing an Environmental Justice Community Group that ***[will]*** meet on a ***[quarterly]*** basis, with the first meeting ***[taking place prior to]*** Project implementation, to share updated data and analysis and hear about potential concerns. ***[As it relates to environmental justice, the Project Sponsors will continue providing meaningful opportunities for participation and engagement by sharing updated data and analysis, listening to concerns, and seeking feedback on the toll setting process.]*** ***...Continued below...***

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17 – Environmental Justice (Cont'd)	Low-income drivers (Cont'd)	***[The EA as published in August 2022 found]*** the increased cost to drivers with the new CBD toll would disproportionately affect low-income drivers to the Manhattan CBD who do not have ***[a reasonable]*** alternative for reaching the Manhattan CBD. ***[With further analysis of the population affected and the addition of new mitigation, the Final EA concludes there would not be a disproportionately high and adverse effect on low-income drivers. (Cont'd).]***	28-county study area	Narrative	The increased cost to drivers with the new CBD toll would ***[occur under]*** all tolling scenarios (Cont'd).							Yes	***[New in Final EA – TBTA will ensure the overnight toll for trucks and other vehicles is reduced to at or below 50 percent of the peak toll from at least 12:00 a.m. to 4:00 a.m. in the final CBD toll structure; this will benefit low-income drivers who travel during that time.*** ***New in the Final EA – For five years, TBTA commits to a Low-Income Discount Plan for low-income frequent drivers who will benefit from a 25 percent discount on the full CBD E-ZPass toll rate for the applicable time of day after the first 10 trips in each calendar month (not including the overnight period, which will already be deeply discounted).*** ***Enhancement*** ***TBTA will coordinate with MTA NYCT to improve bus service in areas identified in the EA as the Brooklyn and Manhattan Bus Network Redesigns move forward.]***
	Taxi and FHV drivers	***[The EA as published in August 2022 found a]*** potential disproportionately high and adverse effect would occur to taxi and FHV drivers in New York City, who largely identify as minority populations, in tolling scenarios that toll their vehicles more than once a day. This would occur in unmodified Tolling Scenarios A, D, and G; for FHV drivers, it would also occur in Tolling Scenarios C and E. The adverse effect would be related to the cost of the new CBD toll and the reduction of VMT for taxis and FHVs, which would result in a decrease in revenues that could lead to losses in employment. ***[With the addition of new mitigation, the Final EA concludes there would not be a disproportionately high and adverse effect on taxi and FHV drivers.]***	New York City	Narrative	Potential adverse effect would occur in Tolling Scenarios A, D, and G, which would not have caps or exemptions for taxis and FHV drivers.							Yes	***[New in Final EA – Mitigation needed. TBTA will ensure that a toll structure with tolls of no more than once per day for taxis or FHVs is included in the final CBD toll structure.]***
				Change in daily taxi/FHV VMT with passengers in the CBD relative to No Action Alternative: Scenarios included in EA	-21,498 (-6.6%)	+15,020 (+4.6%)	-11,371 (-3.5%)	-54,476 (-16.8%)	-25,621 (-7.9%)	+4,962 (+1.5%)	-27,757 (-8.6%)		
				Net change in daily taxi/FHV trips to CBD relative to scenarios included in EA: Additional analysis to assess effects of caps or exemptions	Tolls capped at 1x / Day. +2%.	—	—	Tolls capped at 1x / Day. +3%. Exempt: +50%.	—	—	Tolls capped at 1x / Day. +2%.		

EA CHAPTER / ENVIRONMENTAL CATEGORY	TOPIC	SUMMARY OF EFFECTS	LOCATION	DATA SHOWN IN TABLE	TOLLING SCENARIO A	B	C	D	E	F	G	POTENTIAL ADVERSE EFFECT	MITIGATION AND ENHANCEMENTS
[17 – Environmental Justice (Cont'd)	*Increases or decreases in traffic, as a result of traffic diversions, in communities already overburdened by pre-existing air pollution and chronic diseases*	*Certain environmental justice communities would benefit from decreased traffic; some communities that are already overburdened by pre-existing air pollution and chronic diseases could see an adverse effect as a result of increased traffic.*	*The specific census tracts that would experience increased or decreased traffic change slightly depending on the tolling scenario. The following communities could have census tracts that merit place-based mitigation: High Bridge, Morrisania and Crotona, Tremont, Hunts Point, Mott Haven, Pelham, Throgs Neck, Northeast Bronx, East Harlem, Randall's Island, Lower East Side/Lower Manhattan, Downtown Brooklyn, Fort Greene, South Williamsburg, Orange, East Orange, Newark, and Fort Lee. (See Note 1.)*	*Narrative*	*Census tracts with pre-existing air pollutant and chronic disease burdens that would benefit from reduced traffic, and those affected by increased traffic would vary somewhat, but the identified communities remain largely the same across tolling scenarios. Under Tolling Scenario G, Fort Lee would not experience increases.*							Yes	***New in Final EA – Mitigation needed.*** ***Regional Mitigation*** ***TBTA will ensure the overnight toll for trucks and other vehicles is reduced to at or below 50 percent of the peak toll from at least 12:00 a.m. to 4:00 a.m. in the final toll structure; this will reduce truck diversions.*** *NYCDOT will expand the NYC Clean Trucks Program to accelerate the replacement of eligible diesel trucks, which travel on highways in certain environmental justice communities where the Project is projected to increase truck traffic, to lower-emission electric, hybrid, compressed natural gas, and clean diesel vehicles.* *NYCDOT will expand its off-hours delivery program in locations where the Project is projected to increase truck diversions to reduce daytime truck traffic and increase roadway safety in certain environmental justice communities.* ***Place-based Mitigation*** *TBTA will tell vehicles traveling northbound on the FDR Drive that exit at East Houston Street and then turn to immediately travel south on FDR Drive, they will mitigate negative non-truck traffic increases on the FDR Drive between the Brooklyn Bridge and East Houston Street.* *NYCDOT will coordinate to replace diesel-burning TRUs at Hunts Point with cleaner vehicles.* *NYSDOT will coordinate to expand electric truck charging infrastructure.* *The Project Sponsors will coordinate to install roadside vegetation to improve near-road air quality.* *The Project Sponsors will renovate parks and greenspaces.* *The Project Sponsors will install or upgrade air filtration units in schools.* *The Project Sponsors will coordinate to expand existing asthma case management programs and create new community-based asthma programming through a neighborhood asthma center in the Bronx.]*

OVERALL PROJECT ENHANCEMENT. The Project Sponsors commit to ongoing monitoring and reporting of potential effects of the Project, including for example, traffic entering the CBD, vehicle-miles traveled in the CBD; transit ridership from providers across the region; bus speeds within the CBD; air quality and emissions trends; parking; and Project revenue. Data will be collected in advance and after implementation of the Project. A formal report on the effects of the Project will be issued one year after implementation and then every two years. In addition, a reporting website will make data, analysis, and visualizations available in open data format to the greatest extent ***[practicable]***. Updates will be provided on at least a bi-annual basis as data becomes available and analysis is completed. ***[This data will also be used to support an adaptive management approach to monitoring the efficacy of mitigation, and adjustments as warranted.]***

[Note:

1 *The Project Sponsors have committed to a toll policy that will reduce the overnight toll rate from at least 12:00 a.m. to 4:00 a.m. Based on the modeling undertaken for the tolling scenarios analyzed in the EA, it is expected that this policy will avoid a substantial portion of projected truck diversions, as many of these diverted trucks were projected to occur during the overnight hours. Following the adoption of the CBD tolling structure by the TBTA Board, which will include this overnight exemption/discount, modeling of the adopted tolling structure will be undertaken to determine where truck diversions are expected to occur. After the communities and census tracts are confirmed through the analysis of the adopted toll schedule, specific siting of place-based mitigation measures will require further coordination between the Project Sponsors, the Environmental Justice Community Group (representing the 10-county environmental justice study area), the relevant communities receiving the place-based mitigation, and relevant local and state implementing agencies.]*

(Table 16-2: Summary of the CBD Tolling Alternative Implementation Approach for Mitigation and Enhancement Measures)

EA CHAPTER - TOPIC	RELEVANT LOCATION(S)	DESCRIPTION OF MITIGATION OR ENHANCEMENT	TIMELINE FOR PRE- AND POST-PROJECT IMPLEMENTATION DATA COLLECTION FOR SPECIFIC MEASURES	THRESHOLD FOR DETERMINING WHEN NEXT STEP(S) WILL BE IMPLEMENTED	TIMING FOR SPECIFIC MEASURES	LEAD AGENCY
4B - Transportation: Highways and Local Intersections - Traffic–Highway Segments	Three highway segments: • Westbound Long Island Expressway (I-495) near the Queens-Midtown Tunnel (midday) • Approaches to westbound George Washington Bridge on I-95 (midday) • Southbound and northbound FDR Drive between East 10th Street and Brooklyn Bridge (PM)	The Project Sponsors will implement a monitoring plan prior to implementation with post-implementation data collected approximately three months after the start of tolling operations and including thresholds for effects; if the thresholds are reached or crossed, the Project Sponsors will implement Transportation Demand Management (TDM) measures, such as ramp metering, motorist information, signage at all identified highway locations with adverse effects upon implementation of the Project. NYSDOT owns and maintains the relevant segments of the Long Island Expressway and I-95. The relevant segment of the FDR is owned by NYSDOT south of Montgomery Street and NYCDOT north of Montgomery Street. Implementation of TDM measures will be coordinated between the highway owners and the owners of any assets relevant to implementing the TDM. Post-implementation of TDM measures, the Project Sponsors will monitor effects and, if needed, TBTA will modify the toll rates, crossing credits, exemptions, and/or discounts within the parameters of the adopted toll schedule to reduce adverse effects.	Exact timing for data collection will be based on seasonality and other factors such as construction activity in accordance with NYCDOT's traffic count best practices. Modeling to quantify delay will be completed within 60 days of data collection. Baseline data will be collected within the six months prior to Project implementation. Post-implementation data will be collected approximately three months after the start of tolling operations. If TDM measures are implemented, additional data will be collected within six months after their implementation to determine whether they have addressed the adverse effect.	An increase in average weekday peak period delay of 2.5 minutes or more. The methods of data collection and evaluation will follow standard practices pursuant to guidelines of NYSDOT Highway Design Manual 5.2 and NYSDOT Data Services procedures.	The monitoring plan will be agreed to by the relevant lead and partnering agencies prior to a decision document being issued. TDM measures will be implemented over a period of two to eighteen months after confirming delays in excess of the threshold for next steps. More readily implementable measures (e.g., variable message signs) will be completed first. NYSDOT currently has two TDM projects progressing on the relevant segments of the LIE and the Cross Bronx (I-95) and TDM measures could be coordinated with these projects, as needed. Modifications to toll rates, crossing credits, exemptions, and/or discounts will be made after confirming delays in excess of the threshold for next steps persist following implementation of TDM measures, to allow for analysis of what the modifications should be and public outreach about any changes.	NYSDOT will lead in partnership with TBTA and NYCDOT.
4B - Transportation: Highways and Local Intersections - Intersections	Four local intersections in Manhattan: • Trinity Place and Edgar Street (midday) • East 36th Street and Second Avenue (midday) • East 37th Street and Third Avenue (midday) • East 125th Street and Second Avenue (AM, PM)	NYCDOT will monitor those intersections where potential adverse effects were identified and implement appropriate signal timing adjustments to mitigate the effect, per NYCDOT's normal practice.	Exact timing for data collection will be based on seasonality and other factors such as construction activity in accordance with NYCDOT's traffic count best practices. Modeling to quantify delay will be completed within 60 days of data collection. Baseline data will be collected within the six months prior to Project implementation. Post-implementation data will be collected within the six months after Project implementation.	For intersections at LOS E or F pre-implementation, an increase in average intersection delay of greater than five seconds. For intersections at LOS D or better pre-implementation, an increase of intersection delay of greater than five seconds at LOS to E or F.	Signal timing adjustments will be made within 90 days of confirming delays in excess of the threshold for next steps.	NYCDOT will lead in partnership with TBTA.

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4C – Transportation: Transit – Transit Elements	Hoboken Terminal–PATH station (NJ) Stair 01/02	TBTA will coordinate with NJ TRANSIT and PANYNJ to monitor pedestrian volumes on Stair 01/02 one month prior to commencing tolling operations to establish a baseline, and two months after Project operations begin. If a comparison of Stair 01/02 passenger volumes before and after Project implementation shows an incremental change that is greater than or equal to 205, then TBTA will coordinate with NJ TRANSIT and PANYNJ to implement improved signage and wayfinding to divert some people from Stair 01/02, and supplemental personnel if needed.	For stair passenger volumes, baseline data will be collected one month prior to commencing tolling operations to establish a baseline, and two months after Project operations begin. Station ridership data is collected and evaluated in an ongoing manner by NJ TRANSIT and PANYNJ.	For signage, if a comparison of Stair 01/02 peak-hour passenger volumes before and after Project implementation shows an incremental change that is greater than or equal to 205. For supplemental personnel, if the threshold for signage has been reached but signage has not yet been installed, and overall ridership at Hoboken Terminal is 90 percent of 2019 levels 30 days prior to commencing tolling operations.	The monitoring plan will be agreed to by TBTA, PANYNJ, and NJ TRANSIT prior to a decision document being issued and MOU will be drafted thereafter. The MOU will be executed within 120 days after toll rates are set. Signage design will commence after the MOU is executed. Signage fabrication and installation will begin immediately after observing passenger volumes in excess of the threshold for next steps. Supplemental personnel, if needed, will be stationed within 45 days after observing passenger volumes in excess of the threshold for next steps. Supplemental personnel will be used until signage is fabricated and installed.	TBTA will lead and coordinate with NJ TRANSIT and PANYNJ.
	42 St-Times Square subway station (Manhattan) Stair MLB/MLB connecting mezzanine to uptown 1/2/3 lines subway platform	TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, TBTA will coordinate with MTA NYCT to remove the center handrail and standardize the riser, so that the stair meets code without the hand rail. The threshold will be set to allow for sufficient time to implement the mitigation so that the adverse effect does not occur.	Exact timing will be based on seasonality and other factors such as service changes and construction activity in the station. For stair passenger volumes, baseline data will be collected within the six months prior to Project implementation. Post-implementation data will be collected within the first year after Project implementation. Station ridership data is collected and evaluated in an ongoing manner by MTA NYCT based on turnstile entry and exit data throughout the system.	If a comparison of Stair MLB/MLB peak hour weekday passenger volumes before and after Project implementation shows an incremental change that is greater than or equal to 92 passengers in the weekday peak hour, and overall ridership at 42 St-Times Square subway station is 90 percent of 2019 levels. The methods of data collection and evaluation will follow standard practices pursuant to guidelines of the CE R echnical Manual and will be coordinated with NYCT.	Design and resource allocation will begin immediately after the passenger volume threshold is exceeded, and the hand rail will be removed prior to overall ridership at the station exceeding 90 percent of 2019 levels.	TBTA will lead in partnership MTA NYCT.
	Flushing-Main St subway station (Queens)–Escalator E456 connecting street to mezzanine level	TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, MTA NYCT will increase the speed from 100 feet per minute (fpm) to 120 fpm.	Exact timing will be based on seasonality and other factors such as service changes and construction activity in the station. For escalator passenger volumes, baseline data will be collected within the six months prior to Project implementation. Post-implementation data will be collected within the first year after Project implementation.	If a comparison of Escalator E456 peak hour weekday passenger volumes before and after Project implementation shows an incremental change that is greater than or equal to 26 passengers in the weekday peak hour, and overall ridership at Flushing-Main St subway station is 90 percent of 2019 levels. The methods of data collection and evaluation will follow standard practices pursuant to guidelines of the CE R echnical Manual and will be coordinated with NYCT.	Prior to overall ridership at the station exceeding 90 percent of 2019 levels.	TBTA will lead in partnership MTA NYCT.

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4C - Transportation: Transit - Transit Elements (Cont'd)	Union Sq subway station (Manhattan)–Escalator E219 connecting the L subway line platform to the Nos. 4/5/6 line mezzanine	TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, MTA NYCT will increase the escalator speed from 100 fpm to 120 fpm.	Exact timing will be based on seasonality and other factors such as service changes and construction activity in the station. For escalator passenger volumes, baseline data will be collected within the six months prior to Project implementation. Post-implementation data will be collected within the first year after Project implementation. Station ridership data is collected and evaluated in an ongoing manner by MTA NYCT based on turnstile entry and exit data throughout the system.	If a comparison of Escalator E219 peak hour weekday passenger volumes before and after Project implementation shows an incremental change that is greater than or equal to 21 passengers in the weekday peak hour, and overall ridership at Union Sq subway station is 90 percent of 2019 levels. The methods of data collection and evaluation will follow standard practices pursuant to guidelines of the CE R echnical Manual and will be coordinated with NYCT.	Prior to overall ridership at the station exceeding 90 percent of 2019 levels.	TBTA will lead in partnership MTA NYCT.
	Court Sq subway station (Queens)- Stair P2/P4 to Manhattan-bound No. 7 line	TBTA will coordinate with MTA NYCT to implement a monitoring plan for this location. The plan will identify a baseline, specific timing, and a threshold for additional action. If that threshold is reached, TBTA will coordinate with MTA NYCT to construct a new stair from the northern end of the No. 7 platform to the street. The threshold will be set to allow for sufficient time to implement the mitigation so that the adverse effect does not occur.	Exact timing will be based on seasonality and other factors such as service changes and construction activity in the station. For stair passenger volumes, baseline data will be collected within the six months prior to Project implementation. Post-implementation data will be collected within the first year after Project implementation. Station ridership data is collected and evaluated in an ongoing manner by MTA NYCT based on turnstile entry and exit data throughout the system.	If a comparison of Stair P2/P4 peak hour weekday passenger volumes before and after Project implementation shows an incremental change that is greater than or equal to 101 passengers in the weekday peak hour, and overall ridership at Court Sq subway station is 90 percent of 2019 levels, and if construction by an outside developer is not likely in the foreseeable future. The methods of data collection and evaluation will follow standard practices pursuant to guidelines of the CE R echnical Manual and will be coordinated with NYCT.	Design and resource allocation will begin immediately after the passenger volume threshold is exceeded and will be implemented prior to overall ridership at the station exceeding 90 percent of 2019 levels (if construction by an outside developer is not likely in the foreseeable future).	TBTA will lead in partnership MTA NYCT.
4E - Transportation: Pedestrians and Bicycles - Pedestrian Circulation	Herald Square/Penn Station NY	NYCDOT will implement a monitoring plan at this location. The plan will include a baseline, specific timing, and a threshold for additional action. If that threshold is reached, NYCDOT will increase pedestrian space on sidewalks and crosswalks via physical widening and/or removing or relocating obstructions.	Exact timing will be based on seasonality and other factors such as construction activity. Baseline data will be collected within the six months prior to Project implementation. Post-implementation data will be collected within the first year after Project implementation.	An additional 221 pedestrians per hour (pph) during the weekday AM peak hour or 204 pph during the PM peak hour along the west sidewalk of Eighth Avenue between West 34th and West 35th Streets, 265 pph during the AM peak hour or 259 pph during the PM peak hour on the north crosswalk at Sixth Avenue and West 34th Street, and/or 221 pph during the AM peak hour on the north crosswalk at Seventh Avenue and West 32nd Street. The methods of data collection and evaluation will follow standard practices pursuant to guidelines of the CE R echnical Manual and will be coordinated with NYCDOT.	Within 90 days of observing pedestrian counts in excess of the threshold for next steps.	NYCDOT will lead.

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6 – Economic Conditions - Economic Effects of Toll Costs	Manhattan CBD	New in Final EA: The Project Sponsors commit to establishing a Small Business Working Group (SBWG) that will meet six months prior and six months after Project implementation and annually thereafter to solicit ongoing input on whether and how businesses are being affected	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Membership will be confirmed six months prior to Project implementation, with the first meeting taking place prior to implementation, the second meeting within the six months after implementation, and meetings annually thereafter.	TBTA will lead, in partnership with NYSDOT and NYCDOT.
	Multiple throughout the study area	New in Final EA: **TBTA will ensure the overnight toll for trucks and other vehicles is reduced to at or below 50 percent of the peak toll from at least 12:00 a.m. to 4:00 a.m. in the final CBD toll structure; this will also benefit some workers and businesses.**	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Concurrent with Project Implementation.	TBTA will lead.
7 – Parks and Recreational Resources	Manhattan CBD	Refer to Chapter 7, "Parks and Recreational Resources," for a listing of measures to avoid adverse effects to parks.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Will occur during design, development, testing and/or construction as per contract.	TBTA will ensure contractors comply with contract requirements.
8 – Historic and Cultural Resources	45 historic properties within the Project's Area of Potential Effects (APE)	Refer to Chapter 8, "Historic and Cultural Resources," for a listing of measures to avoid adverse effects to historic properties.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Will occur during design, development, testing and/or construction as per contract.	TBTA will ensure contractors comply with contract requirements.
10 – Air Quality	New York City	TBTA will coordinate with NYC DOHMH to expand the City's existing network of sensors to monitor priority locations, and supplement a smaller number of real-time $PM_{2.5}$ monitors to provide insight into time-of-day patterns to determine whether the changes in air pollution can be attributed to changes in traffic occurring after implementation of the Project. The Project Sponsors will select the additional monitoring locations in consideration of air quality analysis in the EA and input from environmental justice stakeholders. NYSDEC and other agencies conducting monitoring will also be consulted prior to finalizing the monitoring approach. The Project Sponsors will monitor air quality prior to implementation (setting a baseline), and two years following implementation. **Following the initial two-year post-implementation analysis period, and separate from ongoing air quality monitoring and reporting, the Project Sponsors will assess the magnitude and variability of changes in air quality to determine whether more monitoring sites are necessary. Data collected throughout the monitoring program will be made available publicly as data becomes available and analysis is completed. Data from the real-time monitors will be available online continuously from the start of pre-implementation monitoring.**	In the year prior to Project implementation (setting a baseline), and two years following Project implementation Locations and durations will be determined in consideration of land uses and non-Project sources of emissions and with input from environmental justice stakeholders	N/A – No threshold required; implemented under any adopted tolling structure.	Allocation of resources and approval of work plans is underway. Baseline data will be collected in the year prior to Project implementation, but the exact start and duration will be dependent on timing for Project implementation. The monitoring locations will be confirmed at least four months prior to data collection. No less than six months of data will be collected prior to Project implementation	TBTA will lead in partnership with NYC DOHMH and NYSDEC

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10 – Air Quality (Cont'd)	Upper Manhattan and the Bronx	MTA is currently transitioning its fleet to zero-emission buses, which will reduce air pollutants and improve air quality near bus depots and along bus routes. MTA is committed to prioritizing traditionally underserved communities and those impacted by poor air quality and climate change and has developed an approach that actively incorporates these priorities in the deployment phasing process of the transition. Based on feedback received during the outreach conducted for the Project and concerns raised by members of environmental justice communities, TBTA coordinated with MTA NYCT, which is committed to prioritizing the Kingsbridge Depot and Gun Hill Depot, both located in and serving primarily environmental justice communities in Upper Manhattan and the Bronx, when electric buses are received in MTA's next major procurement of battery electric buses, which began in late 2022. This independent effort by MTA NYCT is anticipated to provide air quality benefits to the environmental justice communities in the Bronx.	Data on the number and location of MTA's battery-electric buses is collected in an ongoing manner.	N/A – No threshold required; implemented under any adopted tolling structure.	Prioritization is complete. Timeline for receipt of buses is the last quarter of 2026.	TBTA will lead in partnership MTA NYCT.
13 – Natural Resources	Sites of tolling infrastructure and tolling system equipment	Refer to Chapter 13, "Natural Resources," for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Will occur during design, development, testing and/or construction as per contract.	TBTA will ensure contractors comply with contract requirements.
14 – Hazardous Waste	Sites of tolling infrastructure and tolling system equipment	Refer to Chapter 14, "Asbestos-Containing Materials, Lead-Based Paint, Hazardous Wastes, and Contaminated Materials," for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Will occur during design, development, testing and/or construction as per contract.	TBTA will ensure contractors comply with contract requirements.
15 – Construction Effects	Sites of tolling infrastructure and tolling system equipment	Refer to Chapter 15, "Construction Effects," for a listing of construction commitments to avoid, minimize, or mitigate potential negative effects.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Will occur during design, development, testing and/or construction as per contract.	TBTA will ensure contractors comply with contract requirements.
17 – Environmental Justice – Low-income drivers	28-county study area	The Project will include a tax credit for CBD tolls paid by residents of the Manhattan CBD whose New York adjusted gross income for the taxable year is less than $60,000. TBTA will coordinate with the New York State Department of Taxation and Finance (NYS DTF) to ensure availability of documentation needed for drivers eligible for the NYS tax credit.	N/A – No early monitoring required; implemented under any adopted tolling structure. Data on the utilization of tax credits for CBD tolls paid will be collected by NYS DTF.	N/A – No threshold required; implemented under any adopted tolling structure.	Coordination with NYS DTF will begin immediately after Project approval, if approved.	TBTA will lead and coordinate with the NYS DTF.
		TBTA will post information related to the tax credit on the Project website, with a link to the appropriate location on the NYS DTF website to guide eligible drivers to information on claiming the credit.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Information will be made available to the public about the tax credit during the public information campaigns at least 60 days prior to Project implementation. Information will be provided through a combination of methods which may include print publications, radio, billboards, websites, social media, and existing MTA assets such as digital subway station signs and bus advertising. Information will be provided in multiple languages and targeted geographically.	TBTA will lead and coordinate with the NYS DTF.

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17 – Environmental Justice – Low-income drivers (Cont'd)	28-county study area (Cont'd)	TBTA will eliminate the $10 refundable deposit currently required for E-ZPass customers who do not have a credit card linked to their account, and which is sometimes a barrier to access.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	60 days prior to Project implementation.	TBTA will lead.
		TBTA will provide enhanced promotion of existing E-ZPass payment and plan options, including the ability for drivers to pay per trip (rather than a pre-loaded balance), refill their accounts with cash at participating retail locations, and discount plans already in place, about which they may not be aware.	N/A – No early monitoring required; implemented under any adopted tolling structure. Information on the scope and reach of promotion efforts will be documented, and data on E-ZPass account type and volume is collected in an ongoing manner.	N/A – No threshold required; implemented under any adopted tolling structure.	Promotion will be part of the public information campaigns at least 60 days prior to Project implementation.	TBTA will lead.
		TBTA will coordinate with MTA to provide outreach and education on eligibility for existing discounted transit fare products and programs, including those for individuals 65 years of age and older, those with disabilities, and those with low incomes, about which many may not be aware.	N/A – No early monitoring required; implemented under any adopted tolling structure. Information on the scope and reach of outreach efforts will be documented.	N/A – No threshold required; implemented under any adopted tolling structure.	Outreach will be part of the public information campaigns at least 60 days prior to Project implementation.	TBTA will lead in partnership with MTA.
		The Project Sponsors commit to establishing an Environmental Justice Community Group that will meet on a quarterly basis, with the first meeting taking place prior to Project implementation. As it relates to environmental justice, the Project Sponsors will continue providing meaningful opportunities for participation and engagement by sharing updated data and analysis, listening to concerns and seeking feedback on the toll setting process.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Membership will be confirmed six months prior to Project implementation, with the first meeting taking place prior to implementation, the second meeting within the six months after implementation, and meetings quarterly thereafter.	TBTA will lead, in partnership with NYSDOT and NYCDOT.
		New in Final EA: TBTA will ensure the overnight toll for trucks and other vehicles is reduced to at or below 50 percent of the peak toll from at least 12:00 a.m. to 4:00 a.m. in the final CBD toll structure; this will benefit low-income drivers who travel during that time.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Concurrent with Project implementation.	TBTA will lead.
		New in Final EA: For five years, TBTA commits to a Low-Income Discount Plan for frequent low-income drivers who will benefit from a 25 percent discount on the full CBD E-ZPass toll rate for the applicable time of day after the first 10 trips in each calendar month (not including the overnight period, which will already be deeply discounted).	N/A – No early monitoring required; implemented under any adopted tolling structure; application process will begin several months in advance of the commencement of tolling operations.	N/A – No threshold required; implemented under any adopted tolling structure.	Concurrent with Project implementation.	TBTA will lead.
	New York City	TBTA will coordinate with MTA NYCT to improve bus service in areas identified in the EA as the Brooklyn and Manhattan Bus Network Redesigns move forward.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Coordination between TBTA and NYCT is ongoing and will increase after toll rates are set. The Brooklyn Bus Network Redesign Draft Plan was published in December 2022 and will be refined in 2023. The next step in the Manhattan Bus Network Redesign is an Existing Conditions Report.	TBTA will coordinate with NYCT.
17 – Environmental Justice – Taxi and FHV drivers	New York City	New in Final EA: TBTA will ensure that a toll structure with tolls of no more than once per day for taxis or FHVs is included in the final CBD toll structure.	N/A – No threshold required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Concurrent with Project implementation.	TBTA will lead.

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17 – Environmental Justice – Traffic diversion to certain communities already overburdened by pre-existing air pollution and chronic diseases (See Note 1)	Multiple throughout the environmental justice study area	New in Final EA: TBTA will ensure the overnight toll for trucks and other vehicles is reduced to at or below 50 percent of the peak toll from at least 12:00 a.m. to 4:00 a.m. in the final CBD toll structure; this will reduce truck diversions.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Concurrent with Project implementation.	TBTA will lead.
		New in Final EA: NYCDOT will expand NYC Clean Trucks Program to accelerate the replacement of eligible old diesel trucks, which travel on highways in certain environmental justice communities where the Project is projected to increase truck traffic, to lower-emission electric, hybrid, compressed natural gas, and clean diesel vehicles.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Engagement with truck-owning companies will start after toll rates are set; implementation will begin within six months of start of tolling operations.	NYCDOT will lead.
		New in Final EA: NYCDOT will expand its off-hours deliveries program in locations where the Project is projected to increase truck traffic to reduce daytime truck traffic and increase roadway safety in certain environmental justice communities.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Engagement with shippers and receivers will start after the toll rates are set; implementation will begin within six months of start of tolling operations.	NYCDOT will lead.
	FDR Drive between the Brooklyn Bridge and East Houston Street	New in Final EA: TBTA will tell vehicles traveling northbound on the FDR Drive that exit at East Houston Street and then turn to immediately travel south on FDR Drive: this will integrate needed non-truck traffic increases on the FDR Drive between the Brooklyn Bridge and East Houston Street	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Concurrent with Project implementation.	TBTA will lead.
	Hunts Point Produce Market	New in Final EA: The Project Sponsors will coordinate to replace diesel-burning TRUs at Hunts Points with cleaner vehicles at the Hunts Point Produce Market.	N/A – No early monitoring required; implemented under any adopted tolling structure.	N/A – No threshold required; implemented under any adopted tolling structure.	Engagement with TRU owners and lessees for TRU replacement will start immediately receiving Project approval.	NYCDOT will lead.
	The specific census tracts that would experience increased or decreased truck traffic change slightly depending on the tolling scenario. The following communities could have census tracts that merit place-based mitigation: High Bridge, Morrisania and Crotona, Tremont, Hunts Point, Mott Haven, Pelham, Throgs Neck, Northeast Bronx, East Harlem, Randall's Island, Downtown Brooklyn, Fort Greene, South Williamsburg, Orange, East Orange, Newark, and Fort Lee. (See Note 2.)	New in Final EA: NYSDOT will coordinate to expand electric truck charging infrastructure.	After toll rates are set, analyses of the adopted toll structure will be undertaken as outlined in Appendix 17D to determine where truck diversions are expected to occur. With this analysis and through continued engagement with the Environmental Justice Community Group and other stakeholders, specific locations for place-based mitigation will be determined. Data on the scope and impact of mitigation measures implemented will be collected in an ongoing manner.	N/A – No threshold required; implemented under any adopted tolling structure.	Specific locations will be determined after toll rates are set; implementation will begin within six months of start of tolling operations.	NYSDOT will lead.
		New in Final EA: The Project Sponsors will coordinate to install roadside vegetation.			Specific locations will be determined with the affected communities after toll rates are set; implementation will begin within six months of start of tolling operations.	The Project Sponsors will coordinate with relevant state and local agencies.
		New in Final EA: The Project Sponsors will renovate parks and greenspaces.			Specific locations will be determined with the affected communities after toll rates are set; implementation timing will be determined after locations are confirmed.	The Project Sponsors will coordinate with relevant local agencies.
		New in Final EA: The Project Sponsors will install or upgrade air filtration units in schools.			After the toll rates are set, a site/needs assessment will take place prior to start of tolling operations; implementation timing will be determined after locations are confirmed.	The Project Sponsors will coordinate with relevant local agencies.
		New in Final EA: The Project Sponsors will work with NYC DOHMH to expand their asthma case management program and create new community-based asthma programming through a neighborhood asthma center in the Bronx.			After the toll rates are set, a site/needs assessment will take place prior to start of tolling operations; implementation timing will be determined after locations are confirmed.	The Project Sponsors will coordinate with NYC DOHMH.

EA CHAPTER - TOPIC	RELEVANT LOCATION(S)	DESCRIPTION OF MITIGATION OR ENHANCEMENT	TIMELINE FOR PRE- AND POST-PROJECT IMPLEMENTATION DATA COLLECTION FOR SPECIFIC MEASURES	THRESHOLD FOR DETERMINING WHEN NEXT STEP(S) WILL BE IMPLEMENTED	TIMING FOR SPECIFIC MEASURES	LEAD AGENCY
Overall Project Enhancement	Manhattan CBD and locations of potential Project effects	The Project Sponsors commit to ongoing monitoring and reporting of potential effects of the Project, including for example, traffic entering the CBD, vehicle-miles traveled in the CBD; transit ridership from providers across the region; bus speeds within the CBD; air quality and emissions trends; parking; and Project revenue. Data will be collected in advance and after implementation of the Project. A formal report on the effects of the Project will be issued one year after implementation and then every two years. In addition, a reporting website will make data, analysis, and visualizations available in open data format to the greatest extent practicable. Updates will be provided on at least a bi-annual basis as data becomes available and analysis is completed. This data will also be used to support an adaptive management approach to monitoring the efficacy of mitigation, and adjustments as warranted.	Baseline data gathering began in 2019 and will continue through Project implementation as data from external sources becomes available (with some data sets published only annually or quarterly) and data analysis is completed. After Project implementation, these data sets will continue to be collected as they become available and new data sets, such as Project revenue, will start being collected.	N/A – No threshold required; implemented under any adopted tolling structure.	The reporting website will begin reporting baseline data and post-implementation data from the tolling system as soon as practicable after Project implementation. A formal report on the effects of the Project will be issued one year after implementation and then every two years. In addition, the reporting website will make data, analysis, and visualizations available in open data format to the greatest extent practicable. Updates will be provided on at least a bi-annual basis as data becomes available and analysis is completed. This data will also be used to support an adaptive management approach to monitoring the efficacy of mitigation, and adjustments as warranted.	TBTA will lead in partnership with NYCDOT, NYSDOT, with coordination with other agencies and entities for data as appropriate.

Notes:

1 To fund the mitigation measures for this topic the Project Sponsors have committed $155 million over five years. The Project Sponsors commit to these measures, regardless of the tolling structure eventually adopted. The allocation of funding is described in greater detail in Chapter 17, "Environmental Justice." An additional $5 million has been allocated for mitigation and enhancement measures related to monitoring across other topics, along with $47.5 million for the low-income toll discount.

2 The Project Sponsors have committed to a toll policy that will reduce the overnight toll rate from at least 12:00 a.m. to 4:00 a.m. Based on the modeling undertaken for the tolling scenarios analyzed in the EA, it is expected that this policy will avoid a substantial portion of projected truck diversions, as many of these diverted trucks were projected to occur during the overnight hours. Following the adoption of the CBD tolling structure by the TBTA Board, which will include this overnight exemption/discount, modeling of the adopted tolling structure will be undertaken to determine where truck diversions are expected to occur. Following this analysis, specific siting of place-based mitigation measures will require further coordination between the Project Sponsors, the Environmental Justice Community Group (representing the 10-county environmental justice study area), the relevant communities receiving the place-based mitigation, and relevant local and state implementing agencies.

Similarly, while the CBD Tolling Alternative would increase the number of passengers on the regional transit network, this increase would be spread across the network and would not be large enough at any specific stations to result in changes in neighborhood character or economic conditions there due to increased traffic, parking demand, or pedestrian activity.

The CBD Tolling Alternative would result in regional economic benefits associated with travel-time savings, reduced VMT, regional air quality benefits, and the introduction of a reliable funding source for the MTA 2020–2024 Capital Program and subsequent programs.

Within and close to the Manhattan CBD, the CBD Tolling Alternative would reduce traffic congestion as well as parking demand. As described in **Subchapter 5A, "Social Conditions: Population Characteristics and Community Cohesion,"** and **Subchapter 5B, "Social Conditions: Neighborhood Character,"** this would benefit neighborhood character, but the benefits would not have a large influence on real estate and development trends or property values, either negatively or positively. The introduction of the new toll could induce a small number of residents to relocate outside the Manhattan CBD, but as stated in **Subchapter 5A**, this would not substantively change the population characteristics of the Manhattan CBD. Conversely, the CBD Tolling Alternative is unlikely to increase residential property values in the Manhattan CBD because of the reduction in congestion, given the well-established property values and development patterns of the Manhattan CBD, which are influenced by many factors (refer to **Subchapter 5A).**

Near 60th Street in Manhattan, the CBD Tolling Alternative would likely reduce the demand for off-street parking south of 60th Street and increase the demand north of 60th Street. This could jeopardize the viability of one or more parking facilities in the area south of 60th Street. If one or more parking facilities were to close, these facilities could be redeveloped or repurposed with other uses; the sites would be unlikely to remain vacant and would not create a climate of disinvestment that could lead to adverse effects on neighborhood character. It is unlikely that new off-street parking capacity would be added just north of 60th Street. The area is built-out and lacks available sites, and there has been a decades-long trend toward lower parking demand combined with high real estate values in this area (see **Subchapter 5B, "Social Conditions: Neighborhood Character"**).

In summary, the analyses conducted for this EA do not identify any adverse effects of the CBD Tolling Alternative that would occur later in time (i.e., over the long term) or farther removed in distance from the Project. Where changes in travel patterns because of the CBD Tolling Alternative could affect the operation of transportation facilities (i.e., local intersections, highway segments, and transit stations), the Project Sponsors are committed to post-implementation assessments to monitor conditions to confirm the need for Project improvements. Over the long term and for the larger region, the CBD Tolling Alternative would result in benefits for the regional study area and the Manhattan CBD.

16.2.3 Cumulative Effects

Cumulative effects occur when a project in combination with other independently planned projects could result in adverse effects. This EA considers cumulative effects of the Project and other proposed undertakings in the regional study area. The Best Practice Model (BPM) incorporates comprehensive social

and economic projections based on population and employment trends as well as planned land use and transportation projects in the region. The 2023 and 2045 No Action Alternative analysis in this EA incorporates these forecasts for the respective analysis years; therefore, these trends and projects are part of the background condition for the assessment of the CBD Tolling Alternative. Accordingly, the analyses that incorporate BPM results to project future conditions with the Project account for the potential cumulative effect of the Project and other independently planned projects in the regional study area, which include:

- Reconstruction of the Lincoln Tunnel (NJ 495) helix
- Reconstruction of the Port Authority Bus Terminal
- Metro-North Penn Station Access, including four new stations in the Bronx
- Phase 2 of the Second Avenue Subway Project
- The Hudson Tunnel Project

Where potential adverse effects have been identified, the EA recommends measures to mitigate these effects, and the cumulative effects of the CBD Tolling Alternative in combination with other planned projects would also be mitigated.

The improvements to the MTA transportation network included in the MTA 2020–2024 Capital Program and subsequent capital programs would benefit from the introduction of a reliable, sustained source of funding as a result of the CBD Tolling Alternative. Conversely, the increases in transit ridership that would result from the CBD Tolling Alternative would be served by those transit improvements. Cumulatively, the implementation of the CBD Tolling Alternative along with current and planned transit improvements would benefit the region's transportation network.

MTA and LIRR ***[completed]*** the East Side Access Project in late 2022, which provide***[s]*** a second terminal for LIRR trains in Manhattan beneath Madison Avenue and adjacent to Grand Central Terminal, to be called Grand Central Madison. LIRR trains will call on both Penn Station New York and Grand Central Madison, New York, providing direct service to the east and west sides of Midtown Manhattan. The Project Sponsors prepared analysis of the cumulative effects of the completion of East Side Access and implementation of the Project, and the analysis concludes that the effects of the CBD Tolling Alternative are similar with or without completion of East Side Access. The analysis is described in **Section 16.3**.

As an independent action, MTA is currently transitioning its fleet to zero-emission buses, which will reduce air pollutants and improve air quality near bus depots and along bus routes. MTA is committed to prioritizing traditionally underserved communities and those impacted by poor air quality and climate change and has developed an approach that actively incorporates these priorities in the deployment phasing process of the transition. Based on feedback received during the outreach conducted for the Project and concerns raised by members of environmental justice communities TBTA coordinated with MTA NYCT, which is committed to prioritizing the Kingsbridge Depot and Gun Hill Depot, both located in and serving primarily environmental justice communities in Upper Manhattan and the Bronx, when electric buses are received in MTA's next major procurement of battery electric buses, which ***[began]*** in ***[late]*** 2022.

This independent effort by MTA NYCT is anticipated to provide air quality benefits to the environmental justice communities.

16.2.4 Tolling Scenarios

16.2.4.1 Tolling Scenarios A, B, C, D, E, F, and G

As described in **Chapter 2, "Project Alternatives,"** this EA considers multiple tolling scenarios under the CBD Tolling Alternative. The tolling scenarios incorporate different toll schedules to explore the range of effects of various toll policies. By examining multiple tolling scenarios, the Project Sponsors aim to give the Traffic Mobility Review Board flexibility in identifying the toll schedule that it will recommend to the TBTA Board, while ensuring that this EA identifies effects and addresses mitigation to minimize or eliminate potential adverse effects associated with certain tolling scenarios. **Table 2-3** in **Chapter 2** shows the tolling scenarios examined in this EA.

All tolling scenarios would incorporate the same types and locations of tolling infrastructure and tolling system equipment. Therefore, effects related to the location of this tolling infrastructure and tolling system equipment and its construction are the same for all tolling scenarios. The categories of effects that would be the same for all tolling scenarios are parklands and recreational resources, historic and cultural resources, visual resources, natural resources, asbestos-containing materials, lead-based paint, hazardous wastes, and contaminated materials, and construction effects. The mitigation measures identified for any potential adverse effects associated with the CBD Tolling Alternative on these resources would also be the same for all tolling scenarios.

For the analyses that depend on the tolling scenario to assess the potential effects, this EA examines the scenario predicted to result in the most negative effects from implementation of the CBD Tolling Alternative. The scenario with the most negative effects was not the same scenario for every technical analysis, and therefore, the chapters of this EA identify the scenario or scenarios used for the analysis presented in that chapter.

Table 16-1 and the following summarize the differences in the effects of the tolling scenarios:

- **Regional Transportation Effects and Modeling:** All tolling scenarios would reduce traffic volumes within the Manhattan CBD, but to varying degree. Tolling Scenario D results in the greatest overall reduction in vehicle trips entering the Manhattan CBD because it has the greatest reduction in daily work trips by automobile. Tolling Scenario E results in the greatest reduction of truck trips traveling through the Manhattan CBD. Overall, the tolling scenarios result in a 7 percent to 9 percent reduction in VMT in the Manhattan CBD and less than 1 percent reduction in VMT elsewhere in the regional study area.
- **Highways and Local Intersections:** The tolling scenarios would adversely affect up to three highway segments in the midday peak hour and one highway segment in the PM peak hour. The tolling scenarios would not adversely affect highway segments in the AM peak hour. As described in **Table 16-1**, the Project Sponsors would implement travel demand management measures to mitigate these effects as necessary, based on the results of a post-implementation study.

Tolling Scenarios D and F would increase traffic by more than 50 vehicles at the greatest number of local intersections throughout the day (50 intersections) while Tolling Scenario A would affect the least number of intersections throughout the day (nine intersections). The analysis concluded that potential adverse effects would occur at four local intersections in Manhattan and the Project Sponsors have identified measures to mitigate the effects on traffic operations at local intersections. Refer to **Appendix 4B.5, "Transportation: Traffic LOS: CBD Tolling Alternative with Mitigation,"** for more information.

- **Transit:** All tolling scenarios would increase ridership on commuter rail, subways, PATH, buses, ferries, and the tram. None of the tolling scenarios would adversely affect the ability of transit services to accommodate riders by resulting in an exceedance of guideline capacities at the peak load points.

  Tolling Scenarios E and F would cause an adverse effect on Stairway 01/02 at Hoboken Terminal, but other tolling scenarios would avoid the adverse effect at this location. The adverse effect may be mitigated with additional wayfinding.

  In contrasting the projected increases in passenger volumes among the various tolling scenarios, it can be expected that Tolling Scenarios D and F would yield the same or comparable adverse effects that could be addressed with the same Project improvements identified for the representative tolling scenario (Tolling Scenario E). While these adverse effects and need for Project improvements may also materialize for Tolling Scenarios A, B, C, and G, the severity of the adverse effects and extent of Project improvements needed is likely to be relatively less than the other three tolling scenarios (D, E, and F) and varies by station element as a function of projected net passenger increase at the station. Nevertheless, so that the Project does not create an adverse effect at any of the four NYCT station elements described above, monitoring at all four NYCT station elements will be undertaken regardless of the tolling scenario selected. Monitoring of actual conditions before and after program implementation would determine if the potential Project improvement measures identified or variations thereof are warranted for implementation.

- **Parking:** While there would be increased demand for parking at commuter rail stations and some locations outside the Manhattan CBD, none of the tolling scenarios would increase demand enough to result in adverse parking shortfalls.

- **Pedestrians and Bicyclists:** Tolling Scenario E would result in the greatest potential increase in new pedestrian trips near the Herald Square/Penn Station complex and would result in adverse effects on three pedestrian elements (one sidewalk and two crosswalks). These impacts can be mitigated. The other tolling scenarios would result in the same or lesser effects and, based on the results of the analysis for Tolling Scenario E, any adverse effects can be mitigated.

- **Population and Community Cohesion:** None of the tolling scenarios would result in adverse effects on populations and community cohesion. Because the tolling scenarios would increase the cost of trips to the Manhattan CBD, tolling scenarios would affect people that drive to community facilities and services, elderly people that drive a private vehicle or use a taxi/FHV, and disabled people that drive a private vehicle or take a taxi/FHV. Because the tolls differ among tolling scenarios, the degree of these

effects vary based on the time of day and the type of vehicle used for the trip (private automobile or taxi/FHV).

- **Neighborhood Character:** All tolling scenarios would result in minimal changes in neighborhood character within the Manhattan CBD, near the 60th Street Manhattan CBD boundary study area, and within the regional study area.
- **Public Policy:** All tolling scenarios would be generally consistent with regional transportation plans and other relevant public policies, including those that aim to reduce congestion.
- **Economic Considerations:** Most economic effects of the CBD Tolling Alternative would not vary for the tolling scenarios except for effects related to the toll costs. The tolling scenarios and additional analyses assess a variety of tolling policies for taxis and FHVs ranging from charging a toll each time a taxi or FHV enters or remains in the Manhattan CBD to a complete exemption from paying the Manhattan CBD toll. Tolling scenarios that cap or exempt tolls for certain classes of vehicles result in lower costs for those drivers than other tolling scenarios. In particular, Tolling Scenarios B and E would result in lower trip costs for taxis and FHVs, and therefore, a lower reduction in trips by taxis and FHVs than other tolling scenarios. However, the decreased cost for taxis and FHVs would be offset by increased costs for other drivers. (Refer to **Section 16.2.4.3**, for a discussion of modified scenarios with exemptions or caps for taxis and FHVs.) ***[The Project Sponsors have committed that TBTA will ensure a toll structure with tolls of no more than once per day for taxis or FHVs is included in the final CBD toll structure.]***
- **Air Quality:** The tolling scenarios would change the volume of truck trips on local highways at varying locations and of varying degree as compared to the No Action Alternative. The greatest increases in truck trips would occur with Tolling Scenario E at the RFK Bridge. Tolling Scenario B would result in the greatest increase in truck trips on I-95 in Bergen County, New Jersey and on the Cross Bronx Expressway at the McCombs Dam Bridge. For all tolling scenarios, the changes in traffic volumes, including changes in truck trips, would not result in regional or localized exceedances of National Ambient Air Quality Standards, and there would be no adverse effects on air quality from implementation of the CBD Tolling Alternative.
- **Energy:** Because all tolling scenarios would reduce VMT, all tolling scenarios would result in a reduction in energy demand.
- **Noise:** For all tolling scenarios, the predicted increase in traffic at locations in the regional study area would not result in a barely perceptible (between 2 dBA and 3 dBA) or lesser change in noise.
- **Environmental Justice:** All tolling scenarios would increase costs, ranging from $9 to $23 per trip for peak automobile E-ZPass customers, for low-income drivers who live outside the Manhattan CBD and drive to the Manhattan CBD. The taxi and FHV industries have a predominance of drivers that identify as a minority population. ***[The Project Sponsors have committed that TBTA will ensure a toll structure***

with tolls of no more than once per day for taxis or FHVs is included in the final CBD toll structure. This will avoid a disproportionately high and adverse effect on taxi and FHV drivers from the Project.[1]

In addition, the Project Sponsors have committed to ensuring that, for the first five years of the Project, the final tolling structure includes a discounted toll rate for low-income frequent drivers who have either a Federal adjusted gross income reported on their income tax return for the prior calendar year in the amount of no more than $50,000 or proof of enrollment in a qualifying government-provided income-based program (such as the Supplemental Nutrition Assistance Program (SNAP) or the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC)). As examples, a frequent driver could be someone commuting to work or someone who regularly visits a facility for medical care. Through the use of their E-ZPass tag and an associated Low-Income Discount Plan on their E-ZPass account, qualifying drivers will benefit from a 25 percent discount on the full CBD E-ZPass toll rate for the applicable time of day after the first ten trips in each calendar month. (This discount will not include the overnight period, which will already be deeply discounted.)

As a result of the Project, there would also be traffic diversions. Certain environmental justice communities would benefit from decreased traffic, and particularly truck traffic; some communities that are already overburdened by pre-existing air pollution and chronic diseases could see an adverse effect as a result of increased traffic. The Project Sponsors have committed to a package of mitigation measures to address adverse air-quality-related effects on environmental justice communities from traffic diversions due to the Project.]

As previously noted, the Traffic Mobility Review Board would recommend the toll schedule to the TBTA Board. The Project Sponsors would provide information from this EA, including the public review of this EA, to the Traffic Mobility Review Board to inform their decision.

16.2.4.2 Tolling Scenario B with 30 Percent Higher Tolls

Though Tolling Scenario B would not generate sufficient revenue to support the required $15 billion for the MTA Capital Program, it was retained in this analysis because public comments requested consideration of a low toll, combined with certain exemptions and discounts. To meet the revenue goals of the Project screening criteria, an additional variation of the original Tolling Scenario B was modeled. In this variation, toll rates were increased 30 percent from the original Tolling Scenario B for all vehicle classes across all time periods. All other tolling policies in this variation are consistent with the original Tolling Scenario B.

This variation of Tolling Scenario B would meet all the Project objectives. This variation of Tolling Scenario B would reduce VMT in the Manhattan CBD by 8.6 percent compared to the No Action Alternative. This variation would also reduce traffic entering the Manhattan CBD by 17.5 percent. This variation would have minor changes to transit ridership where transit mode share to the Manhattan CBD would grow from 78.2 percent to 79.5 percent of the total journeys accessing the Manhattan CBD. This is a 0.3 percent

[1] *This commitment would not preclude New York City taxi and FHV drivers from benefiting from the low-income driver mitigation measures, including the Low-Income Discount Plan for their vehicles that are not licensed as taxis or FHVs, provided that they can demonstrate eligibility.]*

greater transit mode share than the original Tolling Scenario B, and less than the transit mode share increases in Tolling Scenarios D, E, and F.

For this variation of Tolling Scenario B, truck trips entering the Manhattan CBD would decline 13.8 percent. Similar to the original Tolling Scenario B, taxi and FHV person-journeys into the Manhattan CBD would remain nearly unchanged from the No Action Alternative in this variation of Tolling Scenario B.

16.2.4.3 Additional Analyses of Caps and Exemptions for Taxis and FHVs

In response to concerns expressed during the public outreach process with respect to the anticipated effects of the Project on taxi and FHV drivers, additional analyses were conducted. Specifically, analyses were done to assess the revenue and traffic effects of implementing Tolling Scenarios A and D with a cap of once per day for taxis and FHVs (like Tolling Scenarios B and F), implementing Tolling Scenario D with both taxis and FHVs exempt from the toll, and implementing Tolling Scenario G with a cap of once per day for taxis and FHVs. The effects of the modifications would be as follows:

- **Tolling Scenario A with Taxis/FHVs Capped at Once Per Day –** The estimated value of implementing a cap on taxis and FHVs so that these vehicles would be charged once each day is $100 million in forgone net annual revenue under the tolling rates used in Tolling Scenario A. The cap would result in about 22 percent more taxis and FHVs entering the Manhattan CBD as compared to the original tolling scenario. To still meet the congestion and revenue objectives of the Project, tolls would need to be raised 10 percent to 15 percent on all vehicle classes in Tolling Scenario A to offset forgone taxi and FHV revenues. This would further reduce personal vehicles and trucks at the Manhattan CBD boundary by 2 percent to 3 percent compared to Tolling Scenario A. However, the decline in personal vehicles and trucks would be mostly offset by the increase in taxis and FHVs entering the Manhattan CBD. As a result, the volumes of all vehicles entering the Manhattan CBD would not change overall.
- **Tolling Scenario D with Taxis/FHVs Capped at Once Per Day –** The estimated value of implementing a cap on taxis and FHVs so that these vehicles would be charged once each day is $150 million to $180 million in forgone net annual revenue with the tolling rates in original Tolling Scenario D. The cap would result in about 25 percent more taxis and FHVs entering the Manhattan CBD compared to the original Tolling Scenario D. Since original Tolling Scenario D (with uncapped tolling of taxis and FHVs) would have annual net revenue higher than the Project objectives by about $300 million, this modified Tolling Scenario D would continue to meet the revenue objective without needing to raise toll rates from those in original Tolling Scenario D.
- **Tolling Scenario D with Taxi/FHV Tolling Exemption –** The estimated value of implementing an exemption for taxis and FHVs is $200 million to $250 million in forgone net annual revenue with the tolling rates in original Tolling Scenario D. Exempting taxis and FHVs from the Manhattan CBD toll would increase the number of additional taxis and FHVs entering the Manhattan CBD by up to 50 percent compared to original Tolling Scenario D. Since original Tolling Scenario D (with no exemption for taxis and FHVs) would have annual net revenue higher than the Project objectives by about $300 million, an exemption for taxis and FHVs could be accommodated without needing to raise toll rates presented in Tolling Scenario D.

- **Tolling Scenario G with Taxis/FHVs Capped at Once Per Day –** A variation of Tolling Scenario G was run to test the impact of adding a one-charge-per-day cap to taxis and FHVs. Adding this cap required increasing tolls on other vehicles by about 10 percent to meet the Project's revenue goal. This toll increase was low enough so as not to notably affect the results from Tolling Scenario G, and importantly, still addresses the concerns regarding commercial truck traffic in the South Bronx, though the number of trucks on the Cross Bronx Expressway at Macombs Road, would shift from 50 to 251, which is still lower than every other tolling scenario except Tolling Scenario C.

16.2.4.4 [Additional Analyses of Mitigation Measures Included in the Final EA]

[In the Final EA, the Project Sponsors commit to a number of mitigation measures that affect the tolling structure and/or the cost of the CBD Tolling Program. These include: 1) a further reduced overnight toll for trucks and other vehicles; 2) tolls of no more than once per day for taxis and FHVs; 3) mitigation measures to address potential increased traffic volumes in certain environmental justice communities as a result of Project-related traffic diversions; and 4) a discounted toll rate for frequent low-income drivers for the first five years of the Project.

While some of the tolling scenarios analyzed in the EA reflect this treatment of taxis and FHVs (Tolling Scenarios B, F, and modified scenarios A, D, and G), none include the further reduced overnight toll or the low-income discounted toll rate. Thus, additional analysis was conducted to ensure that with these mitigation measures included, the potential Project effects would still fall within the range of effects modeled for the EA.

To analyze the other mitigation measures' effects, a tolling scenario was developed using modified Scenario B1 as the basis (a version of Scenario B that meets the revenue target, as described in Appendix 2E, page 2E-2; and Appendix 4A, page 4A.2-1). This tolling scenario includes a cap on tolls for taxis and FHVs of once per day and an entirely free period from 12:00 a.m. to 6:00 a.m. for all vehicles, including trucks. For this analysis, the time range and toll rate reduction for the further reduced overnight mitigation were expanded beyond the commitments in the Final EA (tolls that are at or below 50 percent of the peak toll rate from at least 12:00 a.m. to 4:00 a.m.) to capture any differences in effects from the tolling scenarios used in the EA. This modified scenario – referred to as B2 in the following text – demonstrates that the mitigation measures described in the Final EA could be incorporated into the CBD Tolling Program, with the potential effects still falling within the range of effects explored through the current tolling scenarios. Specifically:

1. *<u>VMT and volume reduction objectives of the Project</u>. Tolling Scenario B2 results in a VMT reduction of 8.4 percent and a 17 percent reduction in vehicles entering the Manhattan CBD. These are within the range of effects already modeled in the EA (described in Tables 4A-7 and 4A-5).*
2. *<u>Toll rate</u>. Tolling Scenario B2 requires a peak E-ZPass toll rate of $13.20, which remains within the range of tolling scenarios in the EA (see Table 2-3).*
3. *<u>Revenue target.</u> B2 meets the revenue target, generating $1.07 billion, which is sufficient to cover the cost of the new mitigation measures the Project Sponsors have committed to in the Final EA (including the discounted toll rate for low-income frequent drivers) and, again, does not exceed the range of tolling scenarios in the EA.*

Importantly, since it would result in effects within the range of effects identified above, Tolling Scenario B2 would not have effects on traffic diversions (highways and intersections), or on related air quality, or on environmental justice populations, beyond those already described in the EA.

4. *Traffic diversions in environmental justice communities. Of the tolling scenarios evaluated in the EA for traffic diversions near environmental justice populations, Tolling Scenario B had the highest increase in trucks on the Cross Bronx Expressway at Macombs Road (see Chapter 10, "Air Quality," Section 10.3.2.3). Tolling Scenario B2 would have fewer trucks on this segment compared to Scenario B and would have truck volume increases within the range identified at the other two locations where highway link analysis was performed in the EA (I-95 west of the George Washington Bridge, and at the Robert F. Kennedy Bridge Queens approach).*

The Project Sponsors further concluded that traffic effects from the discounted toll rate for low-income drivers would fall within the range of effects explored through the tolling scenarios in the EA, given the small number of low-income frequent drivers who have no reasonable alternative, relative to the total number of drivers, and given that drivers would still pay a toll, so this discount would not be an incentive for additional people to drive to the Manhattan CBD.

As noted, Tolling Scenario B2 included an entirely free period from 12:00 a.m. to 6:00 a.m., which is a lower toll rate and a longer overnight period than required by the legislation or committed to in the Final EA. Additionally, Tolling Scenario B2 included two other elements that are not required by the legislation and are not part of mitigation commitments in the Final EA – a cap on tolls for trucks at twice per day and an exemption for all buses. This further demonstrates that the mitigation commitments in the Final EA would not result in effects beyond those already described. Most importantly, the additional analysis demonstrates that these changes to the tolling scenarios do not change the fundamental conclusions of the EA.]

16.3 SENSITIVITY ANALYSIS OF EAST SIDE ACCESS PROJECT

The environmental analysis of the Project, including the development of a travel demand model, commenced in June 2019, shortly after the New York State legislature enacted the legislation authoring the Project. At that time, the Project was anticipated to commence operations in early 2021 before the East Side Access Project, a new LIRR connection to Grand Central Terminal, was anticipated to open in late 2022.

The Project uses the BPM for the regional travel demand forecasting. The BPM was refined and updated in 2019 and 2020 with the understanding, as explained above, that East Side Access would start operations after the Project's anticipated commencement. Therefore, East Side Access was not included in the BPM's 2021 No Action Alternative or CBD Tolling Alternative forecasts, but it was included in the 2045 BPM. This allowed the forecasting to capture the opening year of Project operation without East Side Access, and the 2045 forecast to include East Side Access. This approach allowed the forecast to show results both without and with East Side Access, and thus to show the ramifications of both then-anticipated scenarios.

The environmental review for the Project was delayed for a variety of reasons, including the robust public outreach program undertaken by the Project Sponsors and changes in transportation conditions.

Consequently, the Project's proposed commencement date was pushed back from 2021 to 2023, while East Side Access was accelerated and is now expected to start operations in 2022. To make sure that the EA fully assesses predicted conditions in 2023, given the certainty of East Side Access completion by that date, the Project Sponsors have prepared a supplemental analysis to incorporate the East Side Access into the 2023 analysis condition.

For most environmental topics, the incorporation of the East Side Access Project into the 2023 background condition would not result in substantive changes in the potential effects of the CBD Tolling Alternative. However, the changes in travel patterns associated with the East Side Access will increase subway ridership at certain stations and will increase pedestrian and bicycle activity in the vicinity of Grand Central Terminal. The following is an assessment of subway operations and pedestrian circulation and safety for the CBD Tolling Alternative with the East Side Access Project as part of its background condition.

16.3.1.1 Subways

In consideration of the conclusions presented in **Subchapter 4C, "Transportation: Transit,"** there was a comparison of the projected change in ridership for the 2023 build conditions with and without East Side Access to determine if the anticipated differences in riders would change any findings. This increment comparison categorized the analyzed stations into the following: 1) decrease or no increase in incremental subway trips with East Side Access; 2) small increase in incremental subway trips with East Side Access; and 3) notable increase in incremental subway trips with East Side Access.

Category 1: Decrease or No Increase in Incremental Subway Trips with East Side Access

For stations under the without East Side Access condition where no adverse effects were identified, there would likewise be no adverse effects anticipated with East Side Access. These stations would include the following locations:

- Grand Central-42 Street
- Lexington Avenue/53 Street and 51 Street
- Broadway-Lafayette Street and Bleecker Street
- Fulton Street (Manhattan)
- 168 Street-Washington Heights
- 59 Street-Columbus Circle
- Lexington Avenue/59 Street

Conditions with East Side Access would not change the identified effects or recommended improvements identified in **Subchapter 4C, "Transportation: Transit,"** for the following locations:

- 14 Street¬-Union Square
- Times Square-42 Street/42 Street-Port Authority Bus Terminal

Category 2: Small Increase in Incremental Subway Trips with East Side Access

The following small increases in incremental subway trips with East Side Access were identified for two of the analyzed stations:

- Canal Street (station at Canal and Broadway that serves the No. 6 and J, N, Q, R, and Z subway lines)
- Broadway Junction

The associated increase in riders in the AM peak hour with East Side Access would be 230 to 236 riders at the Canal Street station and 245 to 248 riders at the Broadway Junction station. Both stations have multiple entrances and exits and several stairways that lead between the street, the mezzanine, and the platform levels. Thus, these small differences would be dispersed across various station elements such that the increase in volume would not result in adverse effects.

Category 3: Notable Increase in Incremental Subway Trips with East Side Access

Five of the stations analyzed in **Subchapter 4C, "Transportation: Transit,"** would experience a notable increase in incremental subway trips with East Side Access over and above the increments identified without East Side Access. For the 34 Street-Herald Square station, which is expansive and adjacent to Penn Station New York and two other subway stations, the projected AM peak-hour incremental trips would increase from 319 without East Side Access to 380 with East Side Access. These trips would traverse an expansive network of street-level entrances and underground passageways extending from West 32nd to West 35th Streets across Broadway and Sixth Avenue, and onto multiple mezzanine areas and subway platforms. Accordingly, these incremental ridership increases (for both with or without East Side Access) would result in imperceptible changes to operations at these station facilities and are not expected to result in adverse effects.

For the four stations that were analyzed in detail in **Subchapter 4C, "Transportation: Transit,"** the projected increases for the AM peak hour as a result of East Side Access would be 342 to 405 for the 42 St-Bryant Park-5 Avenue station, 313 to 340 for the Atlantic Avenue-Barclays Center station, 268 to 305 for the 14 Street (Sixth Avenue/Seventh Avenue) station, and 332 to 386 for the Court Square station. The application of the higher increments (with East Side Access) to the **Subchapter 4C** analyses results identified no changes in the previously made adverse effect findings. Specifically, there would continue to be no adverse effects at the 42 Street-Bryant Park-5 Avenue, Atlantic Avenue-Barclays Center, and 14th Street (Sixth Avenue/Seventh Avenue) stations. For the Court Square station, the higher "with East Side Access" trip increments would result in the same adverse effect described for the without East Side Access condition and the same improvements identified (i.e., constructing a new stair on the Manhattan-bound No. 7 train platform) would similarly address the adverse effect under the with East Side Access condition.

In addition to the above, the Canal Street station (at Sixth Avenue, which serves the A, C, and E routes) would experience an increase in projected ridership under the East Side Access condition that triggered the need for further analyses. Following the analysis procedures and methodologies detailed in **Subchapter 4C, "Transportation: Transit,"** additional data were collected at this station and calibrated against volume data provided by NYCT and projected volumes presented in the October 2021 SoHo/NoHo Neighborhood Plan

Final Environmental Impact Statement (CEQR Technical Manual, No.: 21DCP059M) to establish a representative baseline for analysis. In coordination with NYCT, projected trip increments were assigned to the station's various control areas and circulation elements and analyzed. This assessment concluded that the incremental increase in trips at this station under the East Side Access condition would not result in any potential adverse effects. **Appendix 4C.7, "Transportation: Level of Service Tables – New York City."** presents the analysis details.

16.3.1.2 Parking

Results of the transportation modeling conducted for the Project with East Side Access using the BPM show that all tolling scenarios evaluated would result in a decrease in the number of vehicle trips entering and leaving the Manhattan CBD and a corresponding increase in the number of trips made to the Manhattan CBD using public transit. Consequently, there would be a decrease in demand for parking within the Manhattan CBD and an increase in demand for parking at the region's transit stations and commuter park-and-ride locations. Based on the BPM results with East Side Access, the increase in commuters at individual stations or park-and-ride facilities outside the Manhattan CBD would be distributed throughout the region, and no locations would have increases in vehicle trips of 50 or more vehicles in the peak hour for any tolling scenario. Moreover, the new vehicle trips at stations would include some customers who would be dropped off without parking and therefore would not add to the demand for parking. Because other modes of public transit in the regional study area (e.g., subways, light rail) would incur even fewer additional vehicle trips as a result of the Project with East Side Access, those locations would also not exceed 50 more vehicles in the peak hour for any tolling scenario. Consequently, using the tiered methodology summarized above and described in greater detail in **Subchapter 4D, "Transportation: Parking,"** no adverse effect would occur to parking conditions at locations in the regional study area.

The number of commuters and visitors to the Manhattan CBD who would use transit for their journey would increase in all tolling scenarios. Although the BPM predicts it would be at far lower numbers than commuter rail and park-and-ride facilities described in the regional study area, some of these new transit users would drive to transit stations in New York City outside the Manhattan CBD to access transit to complete their journey. Consequently, the CBD Tolling Alternative with East Side Access would increase the number of drivers who would seek parking near transit facilities in New York City outside the Manhattan CBD. Based on the BPM results with East Side Access, the increase in the number of travelers at individual transit facilities in New York City outside the Manhattan CBD would be distributed across the city, and no transit destinations would have increases of 50 or more vehicles in the peak hour. Moreover, the new vehicle trips at transit facilities would include some customers who would be dropped off without parking and therefore would not add to the demand for parking. Consequently, using the tiered methodology summarized above and described in more detail in **Subchapter 4D, "Transportation: Parking,"** no adverse effect would occur to parking conditions at locations in New York City outside the Manhattan CBD.

16.3.1.3 Pedestrians and Bicyclists

Analysis prepared for the CBD Tolling Alternative without East Side Access in the background condition identified 16 transit stations where there would be more than 200 new peak-hour pedestrian trips (refer to **Figure 4E-1** and **Table 4E-1**). When including the East Side Access Project in the background condition,

fifteen of these stations would receive more than 200 new peak-hour pedestrian trips in peak hours, but one station—Secaucus NJ TRANSIT station—would not. The CBD Tolling Alternative with East Side Access would not result in any new or additional transit stations that would exceed more than 200 new peak-hour pedestrian trips as compared to the analysis presented in **Subchapter 4E, "Transportation: Pedestrians and Bicyclists." Figure 4E-1 and Table 4E-1** shows the pedestrian analysis study area with East Side Access.

Three areas (**Table 4E-1** and **Figure 4E-1**) would have more than 200 new pedestrians in the peak hour at an individual pedestrian element (i.e., crosswalk, sidewalk, or corner reservoir) as follows:

- Herald Square/Penn Station New York
- Grand Central Terminal
- World Trade Center/Fulton Street

Based on revised analysis that incorporates the East Side Access Project into the background condition, future pedestrian conditions would not change at the World Trade Center/Fulton Street station area as compared to analysis presented in **Subchapter 4E, "Transportation: Pedestrians and Bicyclists,"** and there would be no adverse effects on pedestrian circulation at this location. The detailed analysis results for this station location are presented in **Appendix 4E.5, "Pedestrian Analysis at Commuter Rail Stations in the Regional Study Area including the East Side Access Project."**

For the Herald Square/Penn Station New York and Grand Central Terminal areas, **Table 16-*[3]*** presents the assessment of pedestrian facilities that would accommodate an increase of 200 or more peak-hour pedestrian trips as a result of the CBD Tolling Alternative with East Side Access in the background condition.

Table 16-*[3]*. CBD Tolling Alternative Pedestrian Analysis Results with East Side Access

TRANSIT STATION AREA	PEAK HOUR	PEDESTRIAN ELEMENT	NUMBER OF ANALYSIS LOCATIONS	NUMBER OF LOCATIONS THAT OPERATE AT			
				LOS C OR BETTER	LOS D	LOS E	LOS F
Herald Square/Penn Station New York	AM	Sidewalks	4	3	1	0	0
		Corner Reservoirs	4	4	0	0	0
		Crosswalks	2	1	0	1	0
	PM	Sidewalks	4	4	0	0	0
		Corner Reservoirs	4	4	0	0	0
		Crosswalks	2	1	0	0	1
Grand Central Terminal	AM	Sidewalks	1	0	0	1	0
	PM	Sidewalks	1	0	0	1	0

Because the East Side Access Project would divert some pedestrians from Penn Station New York to the new terminal under Madison Avenue, there would be changes in pedestrian volumes near Penn Station New York. At some locations, volumes would be lower than and the potential effects would be lesser than for the CBD Tolling Alternative without the East Side Access Project. With implementation of the CBD Tolling Alternative, all analysis locations near Herald Square/Penn Station New York would operate at marginally acceptable Level of Service (LOS) D or better except for the following:

- The north crosswalk of Sixth Avenue and West 34th Street would operate at LOS E in the AM peak hour and LOS F in the PM peak hour.

Although there would be no change in the number of congested LOS E or LOS F pedestrian elements with or without the Project, there would be slight deteriorations in square feet per pedestrian (SFP) values. Based on the *CEQR Technical Manual* adverse effects criteria presented in **Subchapter 4E, "Transportation: Pedestrians and Bicycles,"** the CBD Tolling Alternative would result in potential adverse pedestrian effects near Herald Square/Penn Station New York, as follows:

- The Sixth Avenue and West 34th Street north crosswalk would operate at LOS E with a decrease of 1.8 SFP in the AM peak hour and at LOS F with a decrease of 0.6 SFP in the PM peak hour compared to the No Action Alternative.

The potential adverse effects at this location can be resolved through measures that would be implemented as part of the Project. This measure would not affect existing bicycle infrastructure in the street. Increased pedestrian space on the crosswalk can be achieved via physical widening. **Table 16-*[4]*** shows the recommended measure and predicted conditions with the implementation. This measure would be developed in coordination with NYCDOT prior to its implementation. **Table 16-*[4]*** also notes the relative ease of implementation of the recommended measure.

Table 16-*[4]*. CBD Tolling Alternative with Improvement Measures with East Side Access—Pedestrian Level of Service Analysis—Herald Square/Penn Station New York

LOCATION	PROJECT IMPROVEMENT MEASURES	NO ACTION		CBD TOLLING		CBD TOLLING (IMPROVED)	
		SFP	LOS	SFP	LOS	SFP	LOS
Weekday AM Peak Hour							
Sixth Avenue and West 34th Street: north crosswalk	Widen the crosswalk by 1.5 feet (easy to implement). Crosswalk widening of 2.0 feet needed without East Side Access.	12.8	E	11.0	E	12.0	E
Weekday PM Peak Hour							
Sixth Avenue and West 34th Street: north crosswalk	Widen the crosswalk by 1.5 feet (easy to implement). Crosswalk widening of 2.0 feet needed without East Side Access.	6.8	F	6.2	F	6.8	F

Note: SFP = square feet per pedestrian.

The adverse effects and Project improvement measures presented in **Subchapter 4E, "Transportation: Pedestrians and Bicycles"** on the west sidewalk of Eighth Avenue between 35th and West 34th Streets and the north crosswalk of Seventh Avenue and West 32nd Street without East Side Access would not occur with East Side Access.

With implementation of the CBD Tolling Alternative, the west sidewalk of Lexington Avenue between East 44th and East 45th Streets during the AM and PM peak hours would continue to operate at LOS E, with decreases of 1.0 SFP in both peak hours compared to the No Action Alternative. Based on the expected LOS

and the adverse effects criteria, the CBD Tolling Alternative would not result in any adverse pedestrian effects at this or any other pedestrian elements near Grand Central Terminal.

There would be imperceptible volume differences (fewer than 20 pedestrians per peak hour) at the World Trade Center/Fulton Street station area with East Side Access. Therefore, the same conclusion from **Subchapter 4E, "Transportation: Pedestrians and Bicycles,"** can be drawn, which is that bicycle trip increases with the Project would be negligible compared to the magnitude of existing bicycle use adjacent to that transit station complex. A comparison of pedestrian trips at the two other transit hubs with and without East Side Access is presented. With up to 1,695 and 1,407 pedestrian trips, 34 and 28 new hourly bicycle trips would be generated by the Project at Herald Square/Penn Station New York and Grand Central Terminal with East Side Access, assuming a 2 percent bike share, respectively. This is in comparison to 2,051 and 1,205 new pedestrian trips predicted in the peak hours, where 41 and 24 new hourly bicycle trips would be generated by the Project at Herald Square/Penn Station New York and Grand Central Terminal, without East Side Access, assuming a 2 percent bike share, respectively. With or without East Side Access, because there would be an average of fewer than one new bicycle trip per minute, these increases would be negligible compared to the magnitude of existing bicycle use adjacent to the two transit station complexes.

Outside the Manhattan CBD under the CBD Tolling Alternative with East Side Access, the shift to bicycle use because of the CBD Tolling Alternative would not be substantial, based on the predicted numbers of commuters who would shift from automobiles to transit for their daily trips (as well as the inefficiencies of switching from auto to bicycle as distances increase). Although the BPM cannot predict such activity, a small proportion of commuters would shift from automobiles to bicycles for their daily trips, depending on distance, available bicycle facilities, comfort, and other factors. Therefore, the CBD Tolling Alternative would not result in any adverse effects on bicycle operations.

The CBD Tolling Alternative with East Side Access would not result in substantial increases in pedestrian volumes or exacerbate safety concerns at the three identified high-crash locations, which experience high pedestrian volumes throughout the day. The CBD Tolling Alternative with East Side Access would also not result in substantial increases in pedestrian volumes or exacerbate safety concerns at other locations in the Manhattan CBD that do not already experience high pedestrian volumes throughout the day. The CBD Tolling Alternative with East Side Access would not result in substantially modified geometric or operational traffic, pedestrian, or bicycle conditions, with or without recommended improvement measures, which would therefore not exacerbate safety concerns. Also, because of fewer vehicular trips entering and exiting the Manhattan CBD, the CBD Tolling Alternative with East Side Access could result in reduced traffic volumes at these locations. This would help to reduce vehicle-vehicle and vehicle-pedestrian conflicts, leading to an overall benefit to safety. Therefore, the CBD Tolling Alternative with East Side Access would not result in any adverse effects on vehicular, pedestrian, and bicycle safety.

17 Environmental Justice

17.1 INTRODUCTION

This chapter presents an analysis of the potential effects of the CBD Tolling Alternative on low-income and minority populations (collectively, environmental justice populations) and provides an analysis of whether the Project would result in disproportionately high and adverse effects on low-income and minority populations. *[Appendix 17, "Environmental Justice," provides more detailed information on the methodology used to conduct this analysis.]*

The analysis in this chapter is based on the conclusions of the other analyses presented in previous chapters of this EA, concerns raised during the extensive public outreach that FHWA*[, and on supplemental analysis contained in Appendix 17D, "Technical Memorandum," that was developed by the Project Sponsors in response to some of those concerns]*.

17.2 REGULATORY CONTEXT

Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 11, 1994), directs Federal agencies to identify and address, as appropriate, disproportionately high and adverse effects of Federal actions on minority and low-income populations. Its purpose is to focus Federal attention on the environmental and human health effects of Federal actions on minority and low-income populations with the goal of achieving environmental protection for all communities. FHWA defines environmental justice as identifying and addressing disproportionately high and adverse effects of the agency's programs, policies, and activities on minority populations and low-income populations to achieve an equitable distribution of benefits and burdens. This also includes the full and fair participation by all potentially affected environmental justice populations in the transportation decision-making process.[1]

The following Federal regulatory and guidance documents were used for the environmental justice analysis:

- Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (February 1994)[2]
- U.S. Department of Transportation (USDOT) Order 5610.2C, Department of Transportation Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (May 2021)[3]
- USDOT, Environmental Justice Strategy (November 2016)[4]

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1 https://www.fhwa.dot.gov/Environment/environmental_justice/.
2 https://www.archives.gov/files/federal-register/executive-orders/pdf/12898.pdf.
3 https://www.transportation.gov/sites/dot.gov/files/Final-for-OST-C-210312-003-signed.pdf.
4 https://www.transportation.gov/transportation-policy/environmental-justice/environmental-justice-strategy.

- FHWA Order 6640.23A, FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (June 2012)[5]
- FHWA, Guidance on Environmental Justice and the National Environmental Policy Act (NEPA) (December 2011)[6]
- FHWA, Environmental Justice Reference Guide (April 2015)[7]
- Federal Interagency Working Group on Environmental Justice & NEPA Committee, Promising Practices for Environmental Justice Methodologies in NEPA Reviews (March 2016)[8]

17.3 METHODOLOGY

17.3.1 Overview

This chapter evaluates the potential for disproportionately high and adverse effects to environmental justice populations, consistent with FHWA's 2011 *Guidance on Environmental Justice and NEPA*, USDOT Order 5610.2C, and FHWA Order 6640.23A. FHWA and the Project Sponsors conducted extensive public outreach, including outreach targeted to environmental justice populations, during preparation of the EA. The following methodology was used to conduct the environmental justice analysis:

1. Review Project effects to identify appropriate study areas for analysis of environmental justice (**Section 17.4**).
2. Identify existing minority and low-income (environmental justice) populations in the study areas (**Section 17.5**).
3. Determine whether the Project would result in beneficial and/or adverse effects on the identified environmental justice populations. This includes consideration of measures to avoid, minimize, and/or mitigate any adverse effects of the Project as well as potential offsetting benefits to the affected environmental justice populations (**Section 17.6**). Input from environmental justice populations regarding potential issues of concern and mitigation measures is an important part of this step.
4. ***[After accounting for mitigation and enhancement commitments made to address adverse effects,]*** identify whether the Project would result in disproportionately high and adverse effects on environmental justice populations (**Section 17.7**). These are effects that would be predominately borne by environmental justice populations or are appreciably more severe or greater in magnitude on environmental justice populations than the adverse effect suffered by the non-minority or non-low-income population.
5. If disproportionately high and adverse effects on environmental justice populations are anticipated ***[despite mitigation and enhancement commitments]***, evaluate whether there is a further practicable

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5 https://www.fhwa.dot.gov/legsregs/directives/orders/664023a.cfm.
6 https://www.environment.fhwa.dot.gov/env_topics/ej/guidance_ejustice-nepa.aspx.
7 https://www.fhwa.dot.gov/environment/environmental_justice/publications/reference_guide_2015/index.cfm.
8 The Project Sponsors reviewed this document in developing the analysis but used the guidance set forth in FHWA's 2011 Environmental Justice and NEPA. https://www.epa.gov/sites/production/files/2016-08/documents/nepa_promising_practices_document_2016.pdf.

mitigation measure or practicable alternative that would avoid or reduce the disproportionately high and adverse effects.

6. Provide meaningful opportunities for environmental justice populations to provide input on the Project (**Section 17.*[9]***).

17.3.2 Data Sources

The environmental justice analysis is based on the conclusions of the other chapters of this EA, in combination with supplemental data on environmental conditions and information from the U.S. Census Bureau, as follows:

- Information on the effects of the CBD Tolling Alternative is based on the conclusions of the other analyses presented in this EA. These conclusions were informed, in part, by concerns raised by the public during early public outreach for the Project in fall 2021.
- Areas where residents are minority and/or low-income were identified using data from the U.S. Census Bureau 2015-2019 American Community Survey (ACS) 5-Year Estimates. The 2015–2019 ACS 5-Year Estimates is the most current full set of demographic information, including racial and ethnic characteristics and household income and poverty status, available from the U.S. Census Bureau at the census tract level. The 2020 Census information now available does not include a full set of information.
- Socioeconomic characteristics of the traveling public, including minority and/or low-income populations, were based on data from the U.S. Census Bureau's Census Transportation Planning Package (CTPP). The CTPP provides special tabulations, based on the U.S. Census Bureau ACS 5-Year Estimates, that are useful for transportation planning, including commuter flow data at varying geographic scales by mode of commute and household income. The CTPP data include information on commuter patterns for a range of income levels. The most recent CTPP is based on the 2012-2016 ACS 5-Year Estimates and has not been updated to reflect more recent ACS data.
- ***[Supplemental analyses prepared following completion of the August 2022 EA of potential Project-related effects of traffic increases on environmental justice populations that already have high levels, compared to national norms, of pre-existing pollutant or chronic disease burdens.]***
- Conclusions about the effects of the CBD Tolling Alternative on low-income and/or minority populations and potential measures to avoid, minimize, or mitigate those effects were informed by the early public outreach for the Project in fall 2021***[, public comments on the August 2022 EA, and additional outreach following publication of the August 2022 EA related to the supplemental analyses conducted]***. That outreach included public webinars to engage with environmental justice populations throughout the 28-county region, coordination with an Environmental Justice Technical Advisory Group, and meetings with an Environmental Justice Stakeholder Working Group (see **Section 17.*[9]***).

17.4 ENVIRONMENTAL JUSTICE STUDY AREAS

The environmental justice analysis evaluates two types of potential effects of the CBD Tolling Program, neighborhood effects and regional effects:

- **Local (Neighborhood) Effects:** These are effects on local communities. Based on the conclusions of the other chapters of this EA, the potential neighborhood effects of the CBD Tolling Alternative would be primarily related to diverted trips and changes in traffic patterns, and the potential resulting effects in terms of traffic congestion, air emissions, and noise.
- **Regional Effects:** These are effects on regional mobility. The analysis considers how implementation of the CBD Tolling Alternative would affect the regional population in terms of increased costs (tolls), changes in trip time, and changes in transit conditions.

The information presented in **Chapters 4 through 15** of this EA and summarized in **Chapter 16, "Summary of Effects"** (see **Table 16-1**) describe the local and regional effects of implementation of the CBD Tolling Alternative on the general population and identify potential adverse effects and measures to avoid, minimize, or mitigate those effects. FHWA and the Project Sponsors reviewed those conclusions as well as concerns raised during public outreach for the Project to determine what Project effects have the potential to affect environmental justice populations. This informed selection of study areas for the environmental justice analysis, as discussed in **Sections 17.4.1 and 17.4.2**, and the topics to be considered in the analysis (see **Section 17.6**).

In addition, during public outreach conducted for the Project in fall 2021 (see **Section 17.*[9]***), members of the public raised a number of concerns related to the Project's potential for effects on environmental justice populations, and FHWA and the Project Sponsors reviewed those concerns and included them in the analysis of environmental justice presented in this chapter:

- **Potential Project Effects on Traffic, Air Quality, and Noise Near Environmental Justice Neighborhoods:** Participants in public webinars and meetings of the Environmental Justice Stakeholder Working Group and Environmental Justice Technical Advisory Group raised concerns that the CBD Tolling Alternative would divert traffic to circumferential highways around the Manhattan CBD and that these additional vehicles would adversely affect the nearby neighborhoods, including by degrading air quality and increasing noise. Participants also commented that the Project would affect local traffic volumes and potentially air quality and noise, in environmental justice neighborhoods, including on the Lower East Side in the Manhattan CBD and in the South Bronx outside the Manhattan CBD. **Section 17.6.1** of this chapter presents the results of the detailed analysis the Project Sponsors conducted of these issues (see **Sections 17.6.1.1, 17.6.1.2, 17.6.1.3, and 17.6.1.4**).

  In response to comments during the fall 2021 outreach, the Project Sponsors expanded the analyses of traffic, air quality, and noise to include additional locations in environmental justice neighborhoods where concerns were raised, more detailed evaluation of changes in truck volumes on highways and local roadways, and more detailed evaluation of air pollutants of concern in the air quality evaluation. In addition, the Project Sponsors added a tolling scenario for analysis throughout the EA, Tolling Scenario G, to evaluate opportunities for reducing truck diversions that would result from the CBD Tolling Alternative.

  [Following publication of the EA in August 2022, in response to comments received during the public comment period on the EA and input from the Environmental Justice Technical Advisory Group, the

Project Sponsors conducted additional analysis related to the effects of traffic increases due to the CBD Tolling Alternative (see Section 17.6.1.3).]

- **Potential Effects of the Project on Bus Ridership:** Participants in the early outreach commented that the Project has the potential to overburden local bus service as people shift from automobile to public transportation to avoid the toll. The EA includes a detailed analysis of the effects of the Project on public transportation ridership throughout the region, including on bus routes that serve environmental justice neighborhoods. **Section 17.6.1.5** provides information on the results of the analysis.
- **Potential for Indirect Displacement of Low-Income Residents in the Manhattan CBD:** The Environmental Justice Technical Advisory Group raised concerns about the potential involuntary displacement of environmental justice populations. They stated a concern that the CBD Tolling Alternative would attract new middle- and upper-income residents to the Manhattan CBD because of its proximity to transit and reduced vehicle congestion, allowing the new residents to avoid paying the toll. Commenters believed that this would put upward pressure on rents, forcing low-income residents to move to more affordable locations outside the Manhattan CBD. They also expressed concern about the potential increase in the cost of goods for Manhattan CBD and how this might affect the cost of living for low-income residents in the Manhattan CBD (see the next item in this discussion). **Section 17.6.1.8** provides an analysis of the potential for indirect displacement.
- **Potential Effects on the Cost of Goods in the Manhattan CBD:** During public outreach for the Project related to environmental justice, the Environmental Justice Technical Advisory Group raised concerns about the potential for the introduction of a new CBD toll to affect the price of consumer goods in the Manhattan CBD if the costs of new tolls on commercial vehicles would be passed on to customers. **Section 17.6.1.9** provides summarizes the conclusions related to this issue.
- **Increased Cost of Travel to the Manhattan CBD for Low-Income Drivers:** Speakers at the environmental justice webinars and members of the Environmental Justice Technical Advisory Group and Environmental Justice Stakeholder Working Group expressed concerns about increased costs for low-income drivers traveling to the Manhattan CBD. This included concerns related to potential adverse effects on community cohesion and access to the Manhattan CBD as well as the effect of increased costs for low-income drivers who commute to work in the Manhattan CBD. See **Section 17.6.2.1**.

17.4.1 Local Study Area

Based on the review of Project effects identified in other chapters of the EA, most of the potential effects of the CBD Tolling Alternative on environmental justice populations would be local effects. **Appendix 17, "Environmental Justice,"** provides more detail on the conclusions of the EA and how issues were evaluated for consideration in this environmental justice analysis. To evaluate the local effects on environmental justice populations, the Project Sponsors used a 10-county local study area consisting of New York City and the five adjacent counties where the greatest change in traffic volumes and vehicle-miles traveled (VMT) are predicted to occur (**Figure 17-1**). This local study area is the area where localized effects (such as changes in traffic volumes, air emissions, or noise) would occur as a result of the Project. This 10-county study area includes the following:

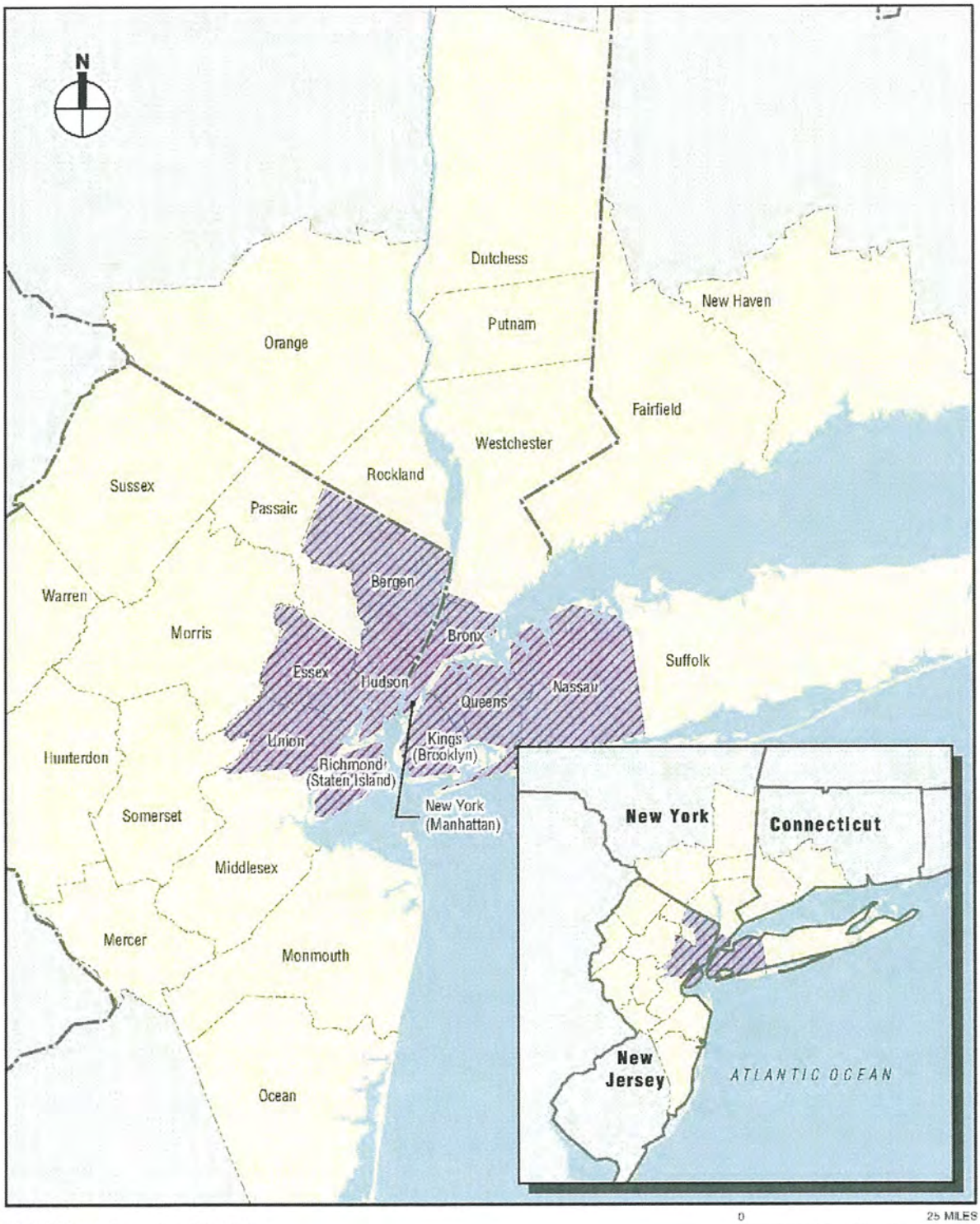
- Bronx County, New York
- Kings County (Brooklyn), New York
- New York County (Manhattan), New York
- Queens County, New York
- Richmond County (Staten Island), New York
- Nassau County, New York
- Bergen County, New Jersey
- Essex County, New Jersey
- Hudson County, New Jersey
- Union County, New Jersey

17.4.2 Regional Study Area

For consideration of the effects of the new toll on people who travel throughout the region, the Project Sponsors used a larger, regional study area (see **Figure 17-1**). The regional study area is the main catchment area for trips to and from the Manhattan CBD and the area where changes in travel patterns and mobility would occur. The 28-county regional study area, which is the same regional study area used in other chapters of the EA, includes the following:

- New York City (Bronx, Kings [Brooklyn], New York [Manhattan], Queens, and Richmond [Staten Island] Counties)
- Long Island (Nassau and Suffolk Counties)
- New York counties north of New York City (Dutchess, Orange, Putnam, Rockland, and Westchester)
- New Jersey counties (Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren)
- Connecticut counties (Fairfield and New Haven)

Figure 17-1. Environmental Justice Study Areas



Source: ArcGIS Online, https://www.arcgis.com/index.html.

17.5 EXISTING MINORITY AND LOW-INCOME POPULATIONS IN THE ENVIRONMENTAL JUSTICE STUDY AREAS

17.5.1 Defining Minority and Low-Income Populations

USDOT Order 5610.2C and FHWA Order 6640.23A define minority and low-income populations as follows:

- **Minority:** A person who is Black or African American (not Hispanic), American Indian ***[or]*** Alaskan Native, Asian American, Native Hawaiian or other Pacific Islander, and Hispanic or Latino. This analysis also includes people who identified themselves as "some other race" or "two or more races" in the U.S. Census. In addition, *minority population* is any readily identifiable groups of minority persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons who will be similarly affected by a proposed FHWA program, policy, or activity.
- **Low-Income:** A person whose household income is at or below the U.S. Department of Health and Human Services poverty guidelines.[9] In addition, a *low-income population* is any readily identifiable groups of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons who will be similarly affected by a proposed FHWA program, policy, or activity.

For the analysis of the local (neighborhood) study area, the following approach was used to identify minority and low-income populations (for more information, see **Appendix 17, "Environmental Justice"**):

- Census tracts in the local study area were considered to be **minority** when either: (1) at least 50 percent of the census tract's population identifies as minority; or (2) the percentage of population identifying as minority in the census ***[tract]*** exceeds the share of minority population in the county where that census tract is located.
- Census tracts in the local study area were considered to be **low-income** when the percentage of individuals with household incomes up to twice the Federal poverty threshold in the census tract was higher than that percentage for the 28-county region.[10] The Project Sponsors in consultation with FHWA identified this income threshold, rather than using the lower Federal poverty threshold, to reflect local conditions and the cost of living in the study area (see **Appendix 17, "Environmental Justice,"** for more information).

For evaluation of the potential effects on people who travel throughout the region (i.e., commuters, travelers, or individuals in specific industries, businesses, or other groups that could be affected by increased cost associated with accessing the Manhattan CBD), the following approach was used to identify minority and low-income populations:

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9 The analysis for this Project used information related to the annual poverty threshold established by the U.S. Census Bureau rather than the U.S. Department of Health and Human Services poverty guidelines. The Health and Human Services poverty guidelines are a simplified version of those Federal poverty thresholds that are used for administrative purposes—for instance, determining financial eligibility for certain Federal programs.

10 For this analysis, the Project Sponsors used data from the U.S. Census on the number of individuals in each census tract with household incomes up to 1.99 times the Federal poverty threshold. For simplicity, this chapter refers to that information as twice the Federal poverty threshold.

- **Minority** populations who commute to work in the Manhattan CBD were identified based on census information available in the CTPP.
- **Low-income** populations who commute to work in the Manhattan CBD were identified based on information available in the CTPP related to worker flows by mode and household income. A household income threshold of $50,000 was used to identify low-income drivers, since no data are available on workers who have household incomes of up to twice the poverty threshold. This is approximately equivalent to, although higher than, the low-income threshold of twice the Federal poverty threshold for a three-person family, consistent with the average household size for the Project study area of 2.8 people per household.[11]

17.5.2 Environmental Justice Populations in the Local Study Area

The local study area includes the Manhattan CBD and the surrounding area that is most likely to be affected by changes in traffic volumes resulting from the CBD Tolling Alternative.

Approximately 617,00 residents live in the Manhattan CBD, with a wide range of income levels and racial and ethnic characteristics. The Manhattan CBD includes a number of different neighborhoods, which the New York City Department of City Planning combines together into neighborhood groupings for analysis purposes. These are illustrated in **Figure 17-2**. As shown in **Figure 17-2**, the Manhattan CBD includes areas with environmental justice census tracts, generally located in the Chinatown, Lower East Side, and Clinton neighborhoods, with additional tracts in other neighborhoods.

Outside the Manhattan CBD, the rest of the local study area includes more than 300 different neighborhoods and local communities. **Figure 17-3** provides an overview of the local study area and **Appendix 17, "Environmental Justice,"** provides additional, more detailed maps and information for each of these neighborhoods. As **Figure 17-3** illustrates, most census tracts in the area immediately surrounding the Manhattan CBD are environmental justice census tracts. **Table 17-1** provides a summary of the population characteristics of the local study area.

17.5.3 Environmental Justice Populations in the Regional Study Area

17.5.3.1 Regional Overview

Minority and low-income populations live throughout the regional study area, which consists of 28 counties around and including New York City. As shown in **Figure 17-4**, environmental justice census tracts are predominantly located close to New York City in the area that constitutes the local study area. **Table 17-2** shows the population characteristics of the regional study area.

[11] The average household size is 2.8 people per household in New York City, the 10-county study area, and the 28-county regional study area.

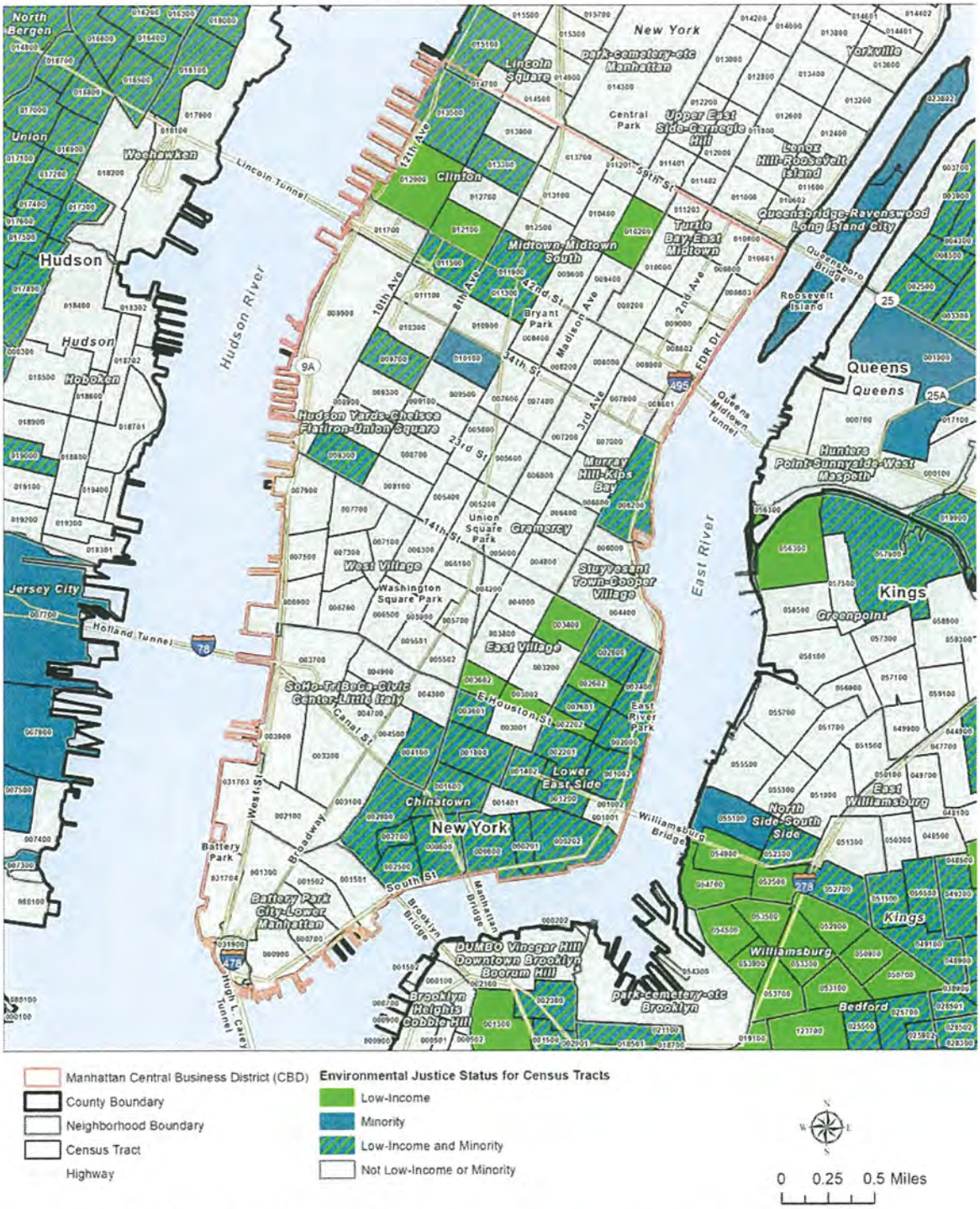
Table 17-1. Population Characteristics of the Local Study Area

GEOGRAPHIC AREA	TOTAL POPULATION	ASIAN (NON-HISPANIC)	BLAC (NON-HISPANIC)	OTHER (NON-HISPANIC)	HISPANIC OR LATINO	WHITE (NON-HISPANIC)	MINORITY	LOW-INCOME
Bronx County	1,435,068	3.6%	29.2%	2.0%	56.0%	9.1%	90.9%	51.0%
Kings County (Brooklyn)	2,589,974	11.8%	30.0%	2.8%	19.0%	36.4%	63.6%	39.1%
New York County (Manhattan)	1,631,993	12.1%	12.5%	2.7%	25.8%	46.9%	53.1%	28.9%
Queens County	2,287,388	25.3%	17.2%	4.4%	28.0%	25.0%	75.0%	31.0%
Richmond County (Staten Island)	474,893	9.2%	9.4%	2.0%	18.4%	61.0%	39.0%	23.0%
Nassau County	1,356,509	9.6%	11.1%	2.4%	16.9%	60.0%	40.0%	14.5%
Bergen County	930,390	16.2%	5.3%	2.0%	19.9%	56.6%	43.4%	16.1%
Essex County	795,404	5.3%	38.4%	2.7%	23.0%	30.5%	69.5%	33.3%
Hudson County	670,046	15.0%	10.5%	2.6%	43.1%	28.8%	71.2%	32.8%
Union County	554,033	5.0%	20.1%	3.8%	31.6%	39.5%	60.5%	24.8%
TOTAL	12,725,698	1,628,214 (12.8)	2,525,656 (19.8)	365,709 (2.9)	3,509,208 (27.6)	4,696,911 (36.9)	63.1	31.4

Source: U.S. Census Bureau, ACS 2015–2019 5-Year Estimates.
Notes:

1. Percentages may not add to 100 percent due to rounding.
2. Other includes the census categories of American Indian and Alaska Native, Native Hawaiian or other Pacific Islander, Some Other Race, and Two or More Races. People of any race may also be Hispanic.
3. Total minority percentage consists of all population other than non-Hispanic White people.
4. Low-income population is population with annual household incomes of up to twice (1.99 times) the Federal poverty threshold.

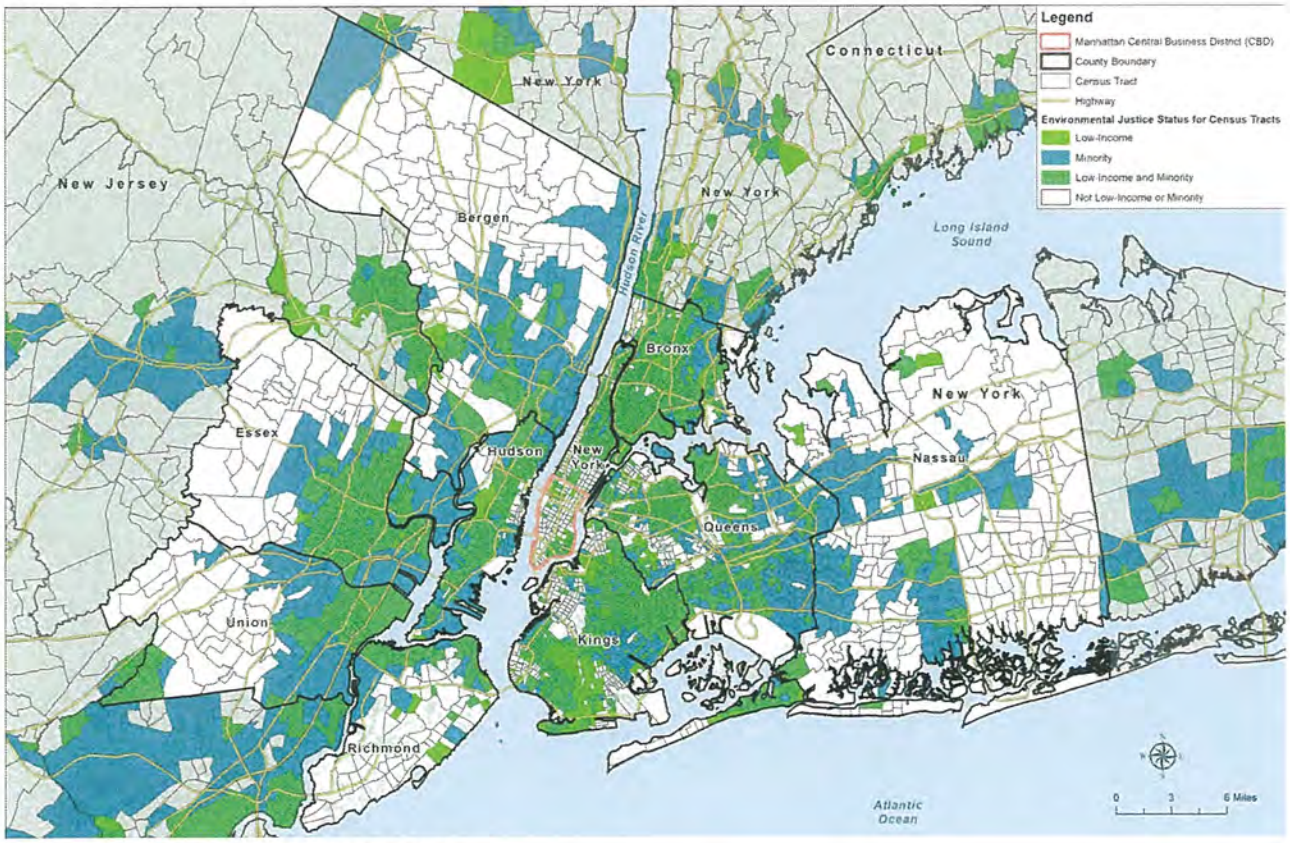
Figure 17-2. Environmental Justice Census Tracts in the Manhattan CBD



Source: U.S. Census Bureau ACS 2015–2019 5-Year Estimates.

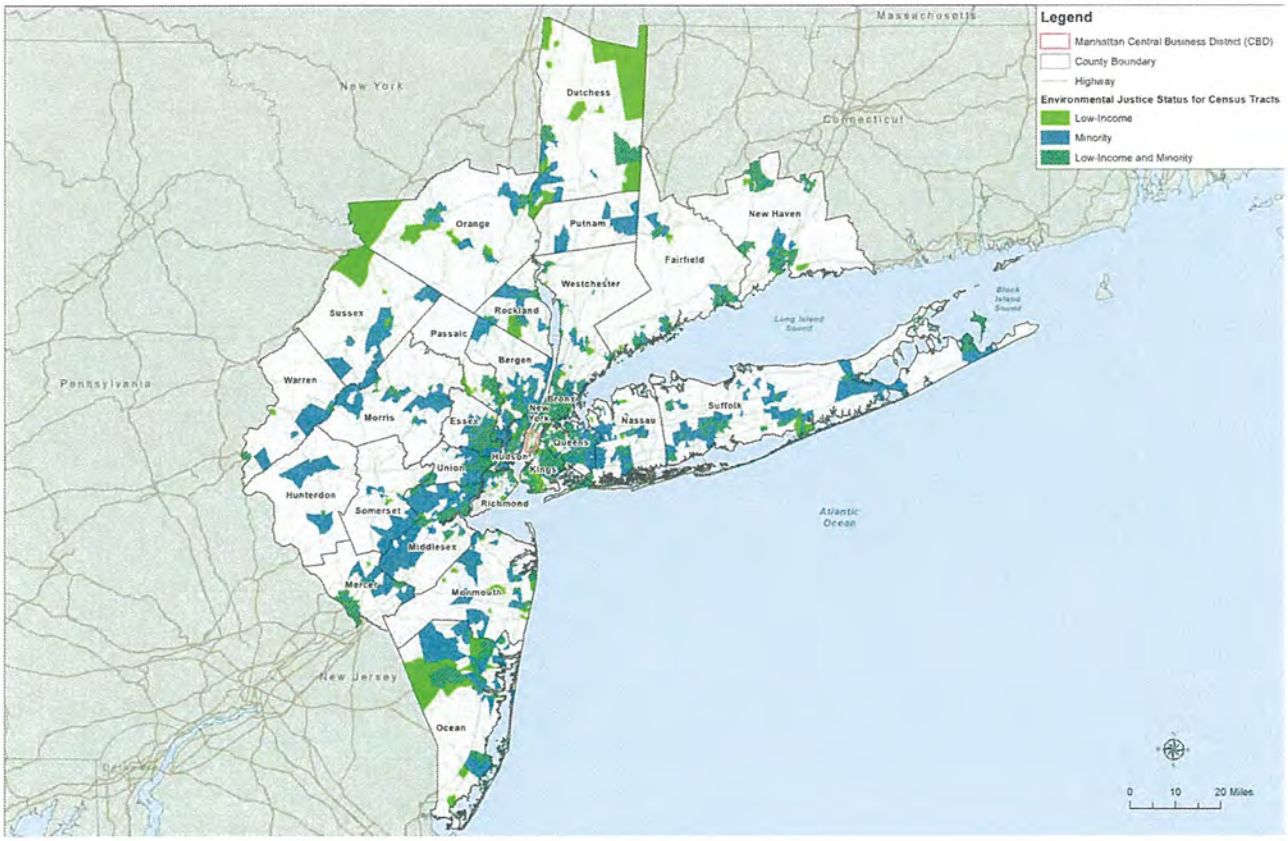
[Note: For an audio description, please go to the following link: https://youtu.be/VdJt3LrAFng.]

Figure 17-3. Environmental Justice Census Tracts in the Local Study Area



Source: U.S. Census Bureau ACS 2015–2019 5-Year Estimates.
[Note: For an audio description, please go to the following link: https://youtu.be/F2veub1A24E.]

Figure 17-4. Environmental Justice Census Tracts in the Regional Study Area



Source: U.S. Census Bureau ACS 2015–2019 5-Year Estimates.
[Note: For an audio description, please go to the following link: https://youtu.be/xTYWedliraY.]

Table 17-2. Population Characteristics of the Regional Study Area

GEOGRAPHIC AREA	TOTAL POPULATION	ASIAN (NON-HISPANIC)	BLAC (NON-HISPANIC)	OTHER (NON-HISPANIC)	HISPANIC OR LATINO	WHITE (NON-HISPANIC)	MINORITY	LOW-INCOME
New York City	8,419,316	1,176,762 (14.0)	1,837,549 (21.8)	254,857 (3.0)	2,447,862 (29.1)	2,702,286 (32.1)	67.9	36.0
Bronx County	1,435,068	3.6%	29.2%	2.0%	56.0%	9.1%	90.9%	51.0%
Kings County (Brooklyn)	2,589,974	11.8%	30.0%	2.8%	19.0%	36.4%	63.6%	39.1%
New York County (Manhattan)	1,631,993	12.1%	12.5%	2.7%	25.8%	46.9%	53.1%	28.9%
Queens County	2,287,388	25.3%	17.2%	4.4%	28.0%	25.0%	75.0%	31.0%
Richmond County (Staten Island)	474,893	9.2%	9.4%	2.0%	18.4%	61.0%	39.0%	23.0%
Long Island Counties	2,840,341	187,841 (6.6)	258,946 (9.1)	61,423 (2.2)	515,858 (18.2)	1,816,273 (63.9)	36.1	15.6
Nassau County	1,356,509	9.6%	11.1%	2.4%	16.9%	60.0%	40.0%	14.5%
Suffolk County	1,483,832	3.9%	7.3%	2.0%	19.3%	67.6%	32.4%	16.7%
New York Counties North of New York City	2,065,938	98,893 (4.8)	236,310 (11.4)	50,928 (2.5)	424,962 (20.6)	1,254,845 (60.7)	39.3	22.3
Dutchess County	293,754	3.5%	9.8%	3.0%	12.2%	71.5%	28.5%	21.4%
Orange County	380,085	2.7%	10.0%	2.6%	20.5%	64.2%	35.8%	25.8%
Putnam County	98,787	2.0%	2.7%	1.5%	15.0%	78.7%	21.3%	12.7%
Rockland County	324,422	5.9%	11.3%	2.0%	17.7%	63.1%	36.9%	28.3%
Westchester County	968,890	5.9%	13.4%	2.5%	24.7%	53.5%	46.5%	20.2%
New Jersey Counties	7,060,811	749,331 (10.6)	856,041 (12.1)	155,823 (2.2)	1,546,228 (21.9)	3,753,388 (53.2)	46.8	22.5
Bergen County	930,390	16.2%	5.3%	2.0%	19.9%	56.6%	43.4%	16.1%
Essex County	795,404	5.3%	38.4%	2.7%	23.0%	30.5%	69.5%	33.3%
Hudson County	670,046	15.0%	10.5%	2.6%	43.1%	28.8%	71.2%	32.8%
Hunterdon County	124,823	4.1%	2.4%	1.4%	6.5%	85.5%	14.5%	10.7%
Mercer County	367,922	11.1%	19.8%	1.8%	17.5%	49.7%	50.3%	25.0%
Middlesex County	825,920	23.9%	9.5%	2.3%	21.2%	43.1%	56.9%	19.4%
Monmouth County	621,659	5.4%	6.7%	1.9%	10.8%	75.2%	24.8%	16.3%
Morris County	493,379	10.3%	3.2%	1.9%	13.3%	71.4%	28.6%	12.4%

Table 17-2. Population Characteristics of the Regional Study Area

GEOGRAPHIC AREA	TOTAL POPULATION	ASIAN (NON-HISPANIC)	BLAC (NON-HISPANIC)	OTHER (NON-HISPANIC)	HISPANIC OR LATINO	WHITE (NON-HISPANIC)	MINORITY	LOW-INCOME
Ocean County	596,415	1.8%	2.8%	1.5%	9.2%	84.7%	15.3%	24.8%
Passaic County	503,637	5.1%	10.4%	1.6%	41.5%	41.3%	58.7%	32.8%
Somerset County	329,838	17.6%	9.2%	2.2%	14.7%	56.3%	43.7%	12.1%
Sussex County	141,483	2.0%	2.1%	1.3%	8.2%	86.3%	13.7%	13.6%
Union County	554,033	5.0%	20.1%	3.8%	31.6%	39.5%	60.5%	24.8%
Warren County	105,862	2.7%	4.4%	2.0%	9.3%	81.7%	18.3%	19.1%
Connecticut Counties	1,801,439	84,153 (4.7)	207,373 (11.5)	46,465 (2.6)	341,331 (18.9)	1,122,117 (62.3)	37.7	23.1
Fairfield County	943,926	5.3%	10.6%	2.6%	19.7%	61.7%	38.3%	20.8%
New Haven County	857,513	4.0%	12.5%	2.5%	18.1%	62.9%	37.1%	25.6%
TOTAL	22,187,845	2,296,980 (10.4)	3,396,219 (15.3)	569,496 (2.6)	5,276,241 (23.8)	10,648,909 (48.0)	52.0	26.8

Source: U.S. Census Bureau, ACS 2015–2019 5-Year Estimates.
Notes:

1. Percentages may not add to 100 percent due to rounding.
2. Other includes the census categories of American Indian and Alaska Native, Native Hawaiian or other Pacific Islander, Some Other Race, and Two or More Races. People of any race may also be Hispanic.
3. Total minority percentage consists of all population other than non-Hispanic White people.
4. Low-income population is population with annual household incomes of up to twice (1.99 times) the Federal poverty threshold.

17.5.3.2 Regional Travel Characteristics

According to 2012–2016 CTPP data, nearly 10.7 million people had their place of employment in the regional study area, and about 14 percent of them (approximately 1.5 million) work in the Manhattan CBD, based on the 2012-2016 CTPP. Of those, approximately 1,262,400 commute from locations outside the Manhattan CBD and the remainder live and work in the Manhattan CBD. **Table 17-3** shows the counties of residence for people who commute to the Manhattan CBD for work, including people who live within the Manhattan CBD itself.

Table 17-3. Comparison of Origins for Commuters to the Manhattan CBD

ORIGIN (PLACE OF RESIDENCE)	COMMUTERS TO MANHATTAN CBD	PERCENTAGE OF STUDY AREA TOTAL
New York City	1,074,244	70.9
Bronx County	99,929	6.6%
Kings County (Brooklyn)	277,884	18.4%
New York County (Manhattan)	454,981	30.0%
Queens County	210,661	13.9%
Richmond County (Staten Island)	30,789	2.0%
Long Island Counties	96,458	6.4
New York Counties North of New York City	89,410	5.9
New Jersey Counties	226,300	14.9
Connecticut Counties	27,697	1.8
TOTAL	1,514,109	100.0

Source: U.S. Census Bureau, CTPP, 2012–2016 Estimate. Percentages may not sum to 100 percent due to rounding.
Notes:

1. Numbers from different tables in the CTPP (e.g., total commuters to the Manhattan CBD) may not be identical due to rounding and different methods of estimating inherent in the CTPP.
2. Long Island counties include Nassau and Suffolk.
   New York counties north of New York City include Dutchess, Orange, Putnam, Rockland, and Westchester.
   New Jersey counties include Bergen, Essex, Hudson, Hunterdon, Mercer, Middlesex, Monmouth, Morris, Ocean, Passaic, Somerset, Sussex, Union, and Warren.
   Connecticut counties include Fairfield and New Haven.

Approximately 28 percent of households in the regional study area do not have a vehicle available for their use (and, conversely, 72 percent of households have one or more vehicles available), although vehicle access varies widely across the region, as shown in **Table 17-4**. The proportion of households that do not have access to a vehicle is substantially higher in Manhattan (77 percent in Manhattan as a whole, 80 percent in the Manhattan CBD), the Bronx (59 percent), and Brooklyn (56 percent), than in the region (28 percent).